THE LANCET.

A Journal of British and Foreign Medicine, Surgery, Obstetrics, Physiology, Chemistry, Pharmacology, Public Health, and News.

TELEGRAPHIC ADDRESS—LANCET, WESTRAND LONDON TELEPHONE NUMBER—GERRARD 5358

No. XIX. of Vol. II., 1916.
No. 4862. Vol. CXCI.

LONDON, SATURDAY, NOVEMBER 4, 1916.

Price 6d.

Crown 8vo. 220 pages. 5s. net.

SYNOPSIS OF MIDWIFERY.

By ALECK W. BOURNE, B.A., M.B., B.C.Camb., F.R.C.S.Eng.

"Based as it is upon the best known text-books, its teaching is not likely to lead the student astray."—LANCET.

"Conveys an extraordinary amount of information in a small bulk."—UNIV. MED. RECORD.

Bristol: John Wright & Sons Ltd. London: Simpkin & Co. Ltd.

NOW READY.

Price 15s. net. Post free 15s. 7d.

SQUIRE'S COMPANION to the BRITISH PHARMACOPŒIA.

An Epitome of over Half a Century's progress in THERAPEUTICS, CHEMISTRY, and PHARMACEUTICS.

Published by J. & A. Churchill, 7, Great Marlborough-street, W.

NOW READY. 4TH EDITION. REVISED AND ENLARGED.
With 374 Illustrations (many in Colour), 11 Coloured Plates. 21s. net.

A PRACTICE OF GYNÆCOLOGY.

With New Chapters on Radiotherapy, and Vaccine Treatment in Gynæcology.

By HENRY JELLETT, M.D., Master Rotunda Hospital, Dublin.

London: J. & A. Churchill, 7, Great Marlborough-street.

J. W. THOMSON WALKER, M.B., C.M.Edin., F.R.C.S.Eng.

SURGICAL DISEASES AND INJURIES OF THE GENITO-URINARY ORGANS.

880 pages, 24 Colour and 21 Black-and-White Plates and 279 Illustrations in the Text. Price 25s. net.

"Will hold its place for many years as the best English text-book of the subject."—BRITISH JOURNAL OF SURGERY.

Cassell & Co., La Belle Sauvage, London, E.C.

Second Edition, Enlarged. Now Ready. Crown 8vo. 6s. net. With 30 original Photographs and 150 special Prescriptions.

TREATMENT OF DISEASES OF THE SKIN.

By KNOWSLEY SIBLEY, M.D. Camb.,
Physician to St. John's Hospital for Diseases of the Skin.

"The most recent methods of treatment, CO_2, hyperæmia, X rays, electrolysis, ionisation, high-frequency ..... are explained. It will be of the greatest value to the general practitioner, and we can thoroughly recommend it."—PRACTITIONER.

London: Edward Arnold, 41 and 43, Maddox-street, W.

BY P. LOCKHART-MUMMERY, F.R.C.S.

DISEASES OF THE COLON AND THEIR SURGICAL TREATMENT.

Numerous Illustrations and Coloured Plates. 10s. net.

Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

BONESETTING and the TREATMENT of PAINFUL JOINTS.

By FRANK ROMER, M.R.C.S., L.R.C.P., and L. ELIOT CREASY, M.R.C.S., L.R.C.P.

Crown 8vo, 1s. net.

"Messrs. Romer & Creasy strip this branch of practice of the cloud of mystery and miracle which has been thrown around it by interested people and well-meaning, but ignorant supporters. They effectually disprove the foolish charge that the medical profession has wilfully ignored the subject, and they have dealt with it in an unprejudiced spirit. Moreover, they bear witness to the fact that the profession keeps an open mind as to everything connected with the treatment of disease and the relief of pain and physical disability, and is willing to learn from any source anything that may seem likely to be useful for these purposes."—BRITISH MEDICAL JOURNAL.

James Nisbet & Co., Limited, 22, Berners-street, W.

H. K. LEWIS & CO. LTD., beg to give notice that on and after MONDAY, NOV. 6th, they will close

AT SIX P.M. MONDAY TO FRIDAY (Saturday 1 P.M.)

MEDICAL PUBLISHERS AND BOOKSELLERS.

MEDICAL AND SCIENTIFIC CIRCULATING LIBRARY.

For Lewis's Publications see Advertisement page 5.

H. K. Lewis & Co. Ltd., 136 Gower-street, W.C.

SAUNDERS' BOOKS ON

DIET AND NUTRITION

See Saunders' Advertisement on Page 3.

A NEW TREATMENT FOR GONORRHŒA.

By CHARLES RUSS, M.B., M.R.C.S., L.R.C.P., Physician-in-Charge, Electro-Therapeutic Department, Male Lock Hospital, London.

Demy 8vo. 3s. net; post free, 3s. 4d. *[Just Published.*

"A study of this little book is essential."—JOURNAL ROYAL NAVAL MEDICAL SERVICE.

London: H. K. Lewis & Co. Ltd., 136 Gower-street, W.C.

By W. McADAM ECCLES, M.S. Lond., Surgeon to St. Bartholomew's Hospital.

HERNIA: Its Etiology, Symptoms, and TREATMENT (Third Edition).

THE IMPERFECTLY DESCENDED TESTIS.

Price 7s. 6d. each net.

London: Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

FOURTH EDITION. JUST PUBLISHED.
8vo. Pp. 260. With 40 Illustrations. Cloth. 6s. net.

SQUINT: its Causes, Pathology and Treatment.

By CLAUD WORTH, F.R.C.S.,
Surgeon, Royal London Ophthalmic Hospital (Moorfields), &c.
Bale, Sons & Danielsson, 83, Gt. Titchfield-street, W.

OPERATIVE TREATMENT OF FRACTURES.

By Sir ARBUTHNOT LANE, Bart., M.S.

SECOND EDITION.

With 226 Illustrations. 10s.

The Medical Publishing Company, Ltd., 23, Bartholomew Close, E.C.

By FREDERICK J. McCANN, M.D. Edin., F.R.C.S.Eng., Surgeon, Samaritan Free Hospital for Women, London, N.W.

CANCER OF THE WOMB: ITS SYMPTOMS, DIAGNOSIS, PROGNOSIS, AND TREATMENT.

Fully illustrated. 20s. net.

LIVERPOOL MEDICO-CHIRURGICAL JOURNAL.—"Cancer of the Womb, by F. J. McCann, is a book that can be recommended alike to the general practitioner and the specialist. Written in a fluent manner, it embodies the ripe experience of a renowned operator, trained observer, and patient investigator."

EDINBURGH MEDICAL JOURNAL.—"The book is one of very great merit; it will be read with interest both by the specialist and general practitioner as an authoritative exposition of the important subject with which it deals."

PRACTITIONER.—"Dr. McCann has produced a valuable work which deserves to be widely known."

ST. BARTHOLOMEW'S HOSPITAL JOURNAL.—"The plates are excellent. This is a book we can thoroughly recommend."

London: Henry Frowde and Hodder & Stoughton.

THE LANCET is registered as a Newspaper. All rights reserved.

"LESLIES' ZINCOPLAST"

A MUCH IMPROVED MAKE OF ZINC OXIDE PLASTER; STRONGLY SELF-ADHESIVE; NON-IRRITATING; DOES NOT DRY UP.

May be obtained on White or Pink Tinted Cloth, 5 yd. or 10 yd. spools, in all the usual widths.

Medical Officers and Pharmacists are invited to write for Trial Sample.

LESLIES' Original Brown Holland Surgical Strapping (DOES NOT SLIP)

In General Hospital Use since 1875. Has a World-wide Reputation.

LESLIES, Ltd., 18, Eldon Street, London, E.C.

SUPPORT BRITISH INDUSTRY AND CAPITAL BY USING

CARBURINE MOTOR SPIRIT

OBTAINABLE EVERYWHERE IN SEALED 2 GLN. CANS.

By Appointment to H.M. THE KING.

IF YOU CANNOT GET SAME FROM YOUR LOCAL GARAGE PLEASE WRITE TO—

G. L. I. Co., LTD., SALISBURY HOUSE, LONDON WALL, LONDON, E.C.

CONTREXÉVILLE PAVILLON Spring PAVILLON

FRENCH Natural Mineral Water

Bottled at the Spring in the Department of the Vosges (FRANCE).

This Water is regularly prescribed in the principal London and Paris hospitals, and replaces advantageously the German Waters of Carlsbad and Wildungen.

CONTREXÉVILLE PAVILLON SPRING WATER is most efficacious in all cases of Uric Acid troubles and against

GOUT, GRAVEL, DIABETES

General Agents: INGRAM & ROYLE, Ltd., 45, Belvedere Road, LONDON, S.E.

THE LANCET.

No. 4862. LONDON, SATURDAY, NOVEMBER 4, 1916. Vol. CXCI.

CONTENTS.

The whole of the literary matter in THE LANCET is copyright.

PRESIDENTIAL ADDRESS on the Possible Functions of the Cerebro-spinal Fluid. Delivered before the Neurological Section of the Royal Society of Medicine on Oct. 26th, 1916, by W. D. HALLIBURTON, M.D. Lond., F.R.S., Professor of Physiology, King's College, London, &c. 779

ORIGINAL ARTICLES.

Further Cases of Kala-azar in Europeans Successfully Treated by Intravenous Injections of Tartar Emetic. By Sir LEONARD ROGERS, C.I.E., M.D. Lond., F.R.C.P. Lond., F.R.S., Lieutenant-Colonel, I.M.S.—(*Illustrated*) 782

Dental Disease in Nursing Women: A Note on the Association between Oral Sepsis and Deficient Lactation. By HAROLD WALLER, M.B., B.C. Cantab.—(*Illustrated*) 785

Massage and Medical Electricity in the After-treatment of Convalescent Soldiers. Account of the Mechano- and Electro-therapeutical Departments at the Command Depôts and Convalescent Camps. By FLORENCE BARRIE LAMBERT, M.B., B.S. Durh., D.P.H. 788

Ultra-Violet Radiation from the Tungsten Arc. By W. J. TURRELL, M.A., M.D. Oxon. ... 790

CLINICAL NOTES:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A Case of Fractured Scaphoid and Os Magnum in a Boy 10 Years Old. By CLAUDE GOULDESBROUGH, M.B., B.Ch. Oxon., M.R.C.S., L.R.C.P. Lond.—(*Illustrated*) 792

Pregnancy Complicated by Increased Cerebro-spinal Pressure; Survival of Mother and Child. By NORMAN GRAY, M.A., M.B., B.C. Cantab. 792

MEDICAL SOCIETIES.

MEDICAL SOCIETY OF LONDON: Orthopædic Principles and Methods in Military Surgery 793

REVIEWS AND NOTICES OF BOOKS.

Arboreal Man. By F. Wood Jones, M.B., D.Sc. Lond. 793

A Text-book upon the Pathogenic Bacteria and Protozoa, for Students of Medicine and Physicians. By Joseph McFarland, M.D., Sc.D. Eighth edition 794

NEW INVENTIONS.

Improved Obstetric Forceps (Chas A. Beck, M.D., L.S.A.).—(*Illustrated*) 794

LEADING ARTICLES.

THE EFFECTS OF FATIGUE ON INDUSTRY AND EFFICIENCY ... 795

THE PROHIBITION OF ALCOHOLIC BEVERAGES 796

ANNOTATIONS.

Unqualified Treatment of Venereal Diseases 797

The Conservation of Mydriatic Drugs 797

Suprarenal Atheroma and its Treatment 798

The Edith Cavell Homes of Rest for Nurses 798

Cyanocuprol and Tuberculosis .. 798

The Metropolitan Water-supply 799

The Nature and Treatment of Carbon Monoxide Poisoning 799

VITAL STATISTICS:

Health of English Towns 802

Health of Scotch Towns 802

Health of Irish Towns 802

Vital Statistics of London during September, 1916 802

Analysis of Sickness and Mortality Statistics in London during September, 1916 803

SPECIAL ARTICLES.

The Treatment of Septic Wounds: Carrel's Sterilisation Method 800

Control of Venereal Diseases: The Borough of Portsmouth Scheme 800

Royal College of Physicians of London: Meeting of Comitia 801

The Services 801

CORRESPONDENCE.

The Differentiation of Heart Murmurs in Soldiers (Prof. David Drummond) 804

The Manufacture of Salvarsan Products in England (Captain W. d'Este Emery, R.A.M.C. (T.), Captain John Everidge, R.A.M.C. (T.)) 804

Enterococcus in the Urine of Convalescent Soldiers (Dr. Georgina Darling, Captain W. James Wilson, R.A.M.C. (T.F.)) 804

Soldiers and Venereal Diseases (Dr Charles J. Macalister) ... 805

The Ethical Standards of Panel Practice (Dr. O. Eccles) 805

Spinal Anæsthesia in Acute Abdomen (Dr. Hugh R. Phillips) 805

Fallopian Tube Found in Femoral Hernia (Dr. J. F. Devane) 805

Skiagrams of Gas Gangrene (Dr. Agnes Savill) 805

Angio-neurotic Œdema (Dr. G. Herbert Rutter) 812

Prolificity of Opposite Twins ... 812

THE WAR.

The Casualty List 806

The Victoria Cross 806

Mentioned in Despatches 806

Deaths among the Sons of Medical Men 806

Surgeons for French Wounded 806

Medical Certificates for Munition Workers 806

Provision of Food and Comforts for Naval Prisoners 808

A Motor X Ray Outfit.—(*Illustrated*) 808

The Federated Malay States Hospital at Kimpton 808

The Armenian Refugees (Lord Mayor's) Fund 808

The War Office and the Dublin Hospitals 808

Wounded Allies Relief Committee 808

OBITUARY OF THE WAR:

Alfred Hugh Benson, M.R.C.S. Eng., L.S.A., Major, Royal Army Medical Corps.—(*With Portrait*) 807

Thomas Lewis Ingram, M.A. Cantab., M.R.C.S. Eng., D.S.O., M.C., Captain, Royal Army Medical Corps.—(*With Portrait*) 807

William Francis MacAlevey, M.R.C.S. Eng., Captain, Royal Army Medical Corps. (*With Portrait*) 807

Martin William Loy, M.R.C.S. Eng., Lieutenant, Royal Army Medical Corps. (*With Portrait*) 807

MEDICAL NEWS.

Society of Members of the Royal College of Surgeons of England 809

Annual Report of County Medical Officer for Aberdeen 809

Memorial to Sir Henry Swanzy 809

Malaria in Calcutta 809

Royal College of Surgeons of Edinburgh: Pass-list 809

Royal Medical Benevolent Fund 809

The Medical School of the University of Cambridge 809

Donations and Bequests 809

Alvarenga Prize of the College of Physicians of Philadelphia 809

Epsom College Royal Medical Foundation 810

London Hospital 810

Medical Mayor 810

PARLIAMENTARY INTELLIGENCE.

House of Lords: The Position in Mesopotamia 810

House of Commons 810

Appointments 811

Vacancies 811

Births, Marriages, and Deaths .. 811

Books, &c., received 811

Notes, Short Comments, and Answers to Correspondents ... 812

Medical Diary 813

Meteorological Readings 814

Acknowledgment of Communications received 814

FOR INDEX TO ADVERTISEMENTS SEE PAGES 2 & 4.

JOHN BALE, SONS & DANIELSSON, LTD.,
PRINTERS, PUBLISHERS, & PROCESS BLOCK MAKERS.

FIRST AID, HOME NURSING, &c. We shall be happy to post, on request, our complete and up-to-date List of Manuals, Aid-books, Diagrams, Charts, &c., intended for Lecturers and Students of these subjects, and compiled by numerous well-known Authorities.

A GUIDE TO THE USE OF TUBERCULIN. By Major ARCHER W. R. COCHRANE, I.M.S., and Major CUTHBERT A. SPRAWSON, I.M.S. 5s. net; postage 3d.

OLD LONDON'S SPAS, BATHS, AND WELLS. By SEPTIMUS SUNDERLAND, M.D. 7s. 6d. net; postage 6d.

83, 85, 87, 89 & 91, GREAT TITCHFIELD ST., OXFORD ST., LONDON, W.

INDEX

MEDICAL AND OTHER BOOKS AND PUBLICATIONS

ARNOLD:— PAGE
Sibley—Treatment of Diseases of the Skin ..... Cover 1

BAILLIERE, TINDALL & COX:—
Bigg—Indigestion 6
Eccles—Hernia: its Etiology, Symptoms, and Treatment Cover 1
Lockhart-Mummery—Diseases of the Colon and their Surgical Treatment ..... Cover 1

BALE, SONS & DANIELSSON:—
Cochrane & Swanwson—A Guide to the Use of Tuberculin 1
First Aid, Home Nursing, &c. 1
Sunderland—Old London's Spas, Baths, and Wells 1
Worth—Squint: its Causes, Pathology and Treatment ..... Cover 1

CAMBRIDGE UNIVERSITY PRESS:
Ashby—Infant Mortality 31
Assheton—Growth in Length 31
Beattie—Postmortem Methods .. 31
Foster and Gaskell—Cerebro-Spinal Fever 31
Oliver, Sir T.—Occupations from the Social, &c., Points of View.. 31
Savage—Bacteriological Examination of Food and Water 31

CASSELL & CO.:—
Hutchison and Rainy—Clinical Methods 6

PAGE
CASSELL & CO.—(Continued.)
Sutherland—Pulmonary Tuberculosis in General Practice 6
Walker—Surgical Diseases and Injuries of the Genito-Urinary Organs ..... Cover 1

CHURCHILL, J. & A.:—
Jellett—A Practice of Gynæcology Cover 1
Squire's Companion to the British Pharmacopœia ..... Cover 1

FROWDE AND HODDER & STOUGHTON:—
McCann—Cancer of the Womb: its Symptoms, Diagnosis, Prognosis, and Treatment .. Cover 1

GRIFFIN & CO.:—
Aitchison—Medical Handbook .. 4
Brend—Medical Jurisprudence .. 4
Brooke—Tropical Medicine, &c. 4
Caird and Catheart—Surgical Handbook 4
Davies & Melville—Hygiene 4

HEINEMANN:—
Galen on the Natural Faculties .. 4

KIMPTON:—
Ashhurst's Surgery: its Principles and Practice 7
Dalton's Venereal Diseases 7
Jackson's Skin Diseases 7
McMurrich's Human Embryology 7
Morton's Text-Book of Radiology 7

PAGE
KIMPTON—(Continued.)
Morton & Cumberbatch's Medical Electricity 7
Niles' Digestive Diseases 7
Watson—Gonorrhœa and its Complications in the Male and Female 7
Webster's Diagnostic Methods .. 7

LEWIS & CO:—
Davidson—Localization by X-Rays and Stereoscopy 5
Martindale and Westcott—The Extra Pharmacopœia 5
Oliver—Studies in Blood Pressure 5
Parkes & Kenwood—Hygiene and Public Health 5
Phillips—Amœbiasis and the Dysenteries 5
Rawling—Landmarks and Surface Markings of the Human Body.. 5
Russ—A New Treatment for Gonorrhœa ..... Cover 1
Shuttleworth and Potts—Mentally Deficient Children 5
Starr—The Adolescent Period: its Features and Management . 5
Starr—Hygiene of the Nursery .. 5
Stevens—Medical Diagnosis 5

MACMILLAN & CO.:—
Brunton, Sir T. L.—Collected Papers on Circulation and Respiration 4

MEDICAL PUBLISHING CO.:—
Lane, Sir A.—Operative Treatment of Fractures..... Cover 1

PAGE
NISBET & CO.:—
Romer and Creasy—Bonesetting and the Treatment of Painful Joints ..... Cover 1

SAUNDERS COMPANY:—
Carter—Diet Lists 3
Friedenwald & Ruhrih—Diet 3
Grulee—Infant Feeding 3
Lusk—Elements of Nutrition 3
Saunders' Books on Diet and Nutrition ..... Cover 1
Smith—What to Eat and Why 3
Stiles—Nutritional Physiology .. 3

SMITH, ELDER & CO.:—
Leftwich—Index of Symptoms .. 7
Shipley—Minor Horrors of War .. 7
" More Minor Horrors.... 7
Wilson—Early Diagnosis of Heart Failure and other Essays on the Heart and Circulation 7

WRIGHT & SONS (BRISTOL):—
Bourne—Synopsis of Midwifery Cover 1

MEDICAL LIBRARIES, &c.:—
Behnke—Stammering, Lisping, & Cleft Palate Speech 6
H. K. Lewis & Co..... Cover 1
Ketley—Stammering 6
Matthews—Wood: Application of Trusses to Hernia 6

OFFICIAL AND GENERAL ANNOUNCEMENTS

ASSISTANCIES, MEDICAL 54

ASYLUMS, HOMES, &c.:—
Abbotswood House, Cinderford .. 50
Ashwood House, Kingswinford .. 48
Barnwood House Hospital 49
Bishopstone House, Bedford 52
Brunton House, Lancaster..... 52
Camberwell House, Peckham-road 50
Capel Lodge Retreat and Sanatorium, near Folkestone 50
Cheadle Royal 49
Clarence Lodge, Clapham Park .. 52
Colthurst House School, Alderley Edge 53
Coppice, The, Nottingham..... 49
Dalrymple House, Rickmansworth 51
Dartmoor Sanatorium 51
David Lewis Colony, Alderley Edge 53
Duff House, Banff..... 51
General Manager, Craven-street.. 53
Ghyllwoods Sanatorium 50
Grove House, Church Stretton .. 49
Grove, The, Catton, Norwich 49
Haslemere Nursing Home 53
Haydock Lodge, Newton-le-Willows 50
Heigham Hall, Norwich 49
Littleton Hall, Brentwood 53
London Fever Hospital 49
Malling Place, Kent 49
Melbourne House, Leicester 50
Mendip Hills Sanatorium 52
Moat House, Tamworth 49
Newmains Retreat, Lanarkshire.. 51
Nordrach-on-Dee, Banchory 51
Northumberland House, Finsbury Park 48
Northwoods House, Winterbourne 50

ASYLUMS—(Continued.)
No. 175, L.O., Strand 55
Peckham House 50
Pendyffryn Hall Sanatorium, Nordrach in Wales 51
Plympton House, Plympton..... 49
Portsmouth Corporation Mental Hospital..... 48
St. Andrew's Hospital, Dollis Hill 53
St. Andrew's Hos., Northampton. 49
St. Luke's Hos. for Mental Diseases 48
Shaftesbury House, Formby-by-the-Sea 50
Springfield House Private Asylum, Bedford 48
Stretton House, Church Stretton. 49
The Grange, near Rotherham 49
Vale of Clwyd Sanatorium 52
Warneford Asylum, Oxford 52
Wye House, Buxton 49

FINANCIAL, &c.:—
Equitable Reversionary Interest Society 46

HEALTH RESORTS, BATHS, &c.:—
Caterham Sanitarium 52
Droitwich Brine Baths..... 52
Peebles Hotel Hydro. 52
Smedley's, Matlock..... 52
Torquay 52

HOSPITAL, INFIRMARY, SANATORIUM, &c., VACANCIES.. 53-54

HOUSE & ESTATE AGENTS:—
Frith & Co., Harringay..... 55
CONSULTING ROOMS:—
Housekeeper, 27, Welbeck street.. 55

LIFE & FIRE ASSURANCES, &c.:—
Medical Sickness and Accident Society 70
Prudential 46

MEDICAL ACCOUNTANTS, &c.:—
Turner..... 55

MEDICAL AGENTS:—
Fieldhall, Limited 55
Manchester Clerical, &c., Association 55
Medical Agency..... 55
Needes, J. C. 55
Peacock & Hadley 55
Turner..... 55

MEDICAL SCHOOLS:—
(LONDON.)
London School of Clinical Medicine 46
West London Post-Graduate College 46

NURSES' ASSOCIATIONS:—
Co-operation of Temperance Male and Female Nurses..... 47
Female Nurses Association 47
General Nursing Association 47
Hospital for Sick Children..... 47
London Nurses' Association 48
London Temperance Nurses Co-operation 48
Male Nurses Temperance Co-operation 47
Mental Nurses Association 48

NURSES' ASSOC. (Continued.)
Mental Nurses' Co-operation 47
New Mental Nurses' Co-operation 48
Nurses' Association 48
Nurses' Co-operation..... 47
Registered Nurses' Society 48
St. John's House 47
St. Luke's Hospital..... 47
Temperance Association of Male Nurses, Ltd. 47
The Retreat, York 48

OFFICIAL NOTICES:—
City of London Lying-in Hospital 44
College of Preceptors 46
Edith Cavell Homes of Rest for Nurses 9
Incorporated Society of Trained Masseuses..... 43
London Hospital..... 46
London School of Tropical Medicine 46
North-East London Post-Graduate College 46
Queen Charlotte's Lying-in Hospital 48
York road General Lying-in Hospital 43

PARTNERSHIPS & PRACTICES. 54

RAILWAY & STEAMSHIP CO.'S.:—
New Zealand Shipping Co..... 48

TUTORS & LECTURERS:—
Schnelle—Stammering 6
Weymouth 46

TRADE AND MISCELLANEOUS ADVERTISEMENTS

AMBULANCES:—
St. John Ambulance — Invalid Carriages 8

ANATOMICAL MECHANICIANS:—
Grossmith's Artificial Eyes, Legs, &c..... 10

BOTTLE MERCHANTS:—
Isaacs 45

CARRIAGES, MOTORS, &c.:—
Armstrong—
Chauffeurs', Coachmen's, Footmen's Liveries 8
Offord & Sons—Ford Cars 6
Seabrook Bros.—R.M.C. Coupés.. 55
Stelastic Tyres, Ltd.—
Stelastic Shrouded Steel-Studded Tyre..... 8

CHEMISTS & DRUGGISTS:—
Allen & Hanburys—
Allenburys Cod-Liver Oil..... 24
Bynol 24
Bynin Emulsion 24
Byno Hypophosphites 26
Allenburys Castor Oil 40
Angier Chemical Co—
Angier's Emulsion 18
Anglo-American Pharmaceutical Company, Ltd.—
Huxley's Compound Syrup of the Acid Glycero-Phosphates.. 34
Peptenzyme 42

CHEMISTS—(Continued.)
Anglo-French Drug Co.—
Neocaine-Surrenine..... 29
Cuprase 24
Antiphlogistine 30
Battley & Watts—
Battley's Liquors..... 32
British Oxygen Co.—Oxygen..... 40
Browning & Co.—Semprolin Emulsion with Salol ..... Cover iii
Bullock & Co.—
Pepsina Porci..... 40
Acid Glycerine of Pepsine 40
Burroughs Wellcome & Co.—
Tabloid Brand Epinine Compound 26
Tabloid Brand Benzoic Acid Compound 26
Kepler Cod Liver Oil with Malt Extract 27
Kepler Malt Extract with Hæmoglobin 27
Christy & Co.—
Glyco-Heroin 39
Clay, Paget & Co.—
Glycolactophos 40
Duncan, Flockhart & Co.—
Tuberculins 56
Vaccines 56
Erasmic Co.—Kinsol Medicated Toilet Soap 38
Evans Sons Lescher & Webb—
Capsul. Ol. Santal. Flav..... 14
Fairchild Bros. & Foster—
Pepsule Digestive Products..... 23

CHEMISTS—(Continued.)
Fassett & Johnson—
Emol-Keleet 56
Fellows' Compound Syrup of Hypophosphites 12
Gale & Co.—Compound Syrup of the Glycerophosphates, &c. 31
Heppelle—
Urodonal 20
Jubol 20
Globeol 20
Pageol, &c. 20
Hewlett & Son—
Mist. Pepsinæ Co c. Bismutho . 19
Mist. Hepatica Conc. 19
Liq. Santal Flav. c. Buchu et Cubebæ 19
Mist. Damianæ Co. 19
Hogg & Son—
Protein Nerve Food 42
Huggins & Co.—
Ozone Paper for Asthma..... 39
Humphrey Taylor & Co.—
Junora 39
Maltine Manufacturing Co.—
Maltine ..... Cover iv
Malto-Yerbine ..... " iv
Maltine with Hypophosphites Cover iv
" with Phosphate Iron, Quinia, and Strychnia.. Cover iv
Maltine with Pepsin and Pancreatin, &c. ..... Cover iv
Mertens—
Electrargol 12

CHEMISTS—(Continued.)
Parke, Davis & Co.—
Prophylactic and Therapeutic Catarrh Vaccines..... 17
Raimes & Co.—Slinger's Nutrient Suppositories 42
Saccharin Corporation, Ltd.—
Salen 21
Vioform 21
Salenal 21
Peristaltin 21
Squire & Sons—
Sterilettes..... 23
Tidman's Sea Salt 40
Whiffen & Sons—
Emetine 33
Wilcox, Jozeau & Co.—
Nativelle's Crystallised Digitaline 33
Arhéol 33
Willows, Francis, Butler & Thompson—
Mackey's Glyceroles 31
Zimmermann & Co.—Subitol..... 32

DISINFECTANTS:—
Boots Pure Drug Co.—
Chloramine-T 15
Chloramine T Gauze 15
Condy's Fluid..... 45
Evans Sons Lescher & Webb—
Lysol Evans..... 14
Hewlett & Son—Lysol 14
Lysol, Ltd.—Lysol 32
Quibell Bros.—Kerol 41

Continued on page 4.

Presidential Address
ON
THE POSSIBLE FUNCTIONS OF THE CEREBRO-SPINAL FLUID.

Delivered before the Neurological Section of the Royal Society of Medicine on Oct. 26th, 1916,

BY W. D. HALLIBURTON, M.D. LOND., F.R.S.,
PROFESSOR OF PHYSIOLOGY, KING'S COLLEGE, LONDON, ETC.

LADIES AND GENTLEMEN,—So much has within recent years been written about the cerebro-spinal fluid that I must apologise for my want of originality in selecting that subject for this address. But however hackneyed the subject, we are still far from possessing complete knowledge as to the functions and significance of the fluid. From the pathological as well as from the physiological point of view, we at least know that this remarkable fluid is one of the greatest importance, and its careful examination in many diseases has yielded results of inestimable value. During the last few years it is a subject at which I have myself worked, and I have been fortunate in securing as my collaborator such a skilful and accurate experimenter as my colleague Professor W. E. Dixon, F.R.S.

One cannot work at any subject for any length of time without speculating beyond actually observed data. It is the safest rule to keep ideas of this nature to oneself, but there are some occasions when it is permissible to speak rather more freely; this is one of them. I happen to be the unworthy occupant of a presidential chair, and for an hour or less I shall be free from contradiction and criticism, so I propose to inflict upon you during that time some speculations, and have only safeguarded myself in the title of this address by alluding to the functions of the fluid as possible rather than probable. As my colleague Dixon is away on war service, I have had no opportunity of discussing the matter with him, so that if I say anything that is wildly improbable he, at any rate, is free from responsibility.

I shall dwell on the subject from the physiological rather than from the pathological standpoint, but I trust that what I have to say will be found of interest to the pathologist and the clinical observer.

CHARACTERS, COMPOSITION, AND FATE OF THE CEREBRO-SPINAL FLUID.

May I, after this preface, proceed next to another chapter, which is also of a prefatory character, and give you as shortly as I can the present state of our knowledge regarding the characters, composition, and fate of the fluid. The fluid, as you know, is, under normal conditions, as clear as water and of low specific gravity; it contains in solution inorganic salts similar to those in the blood-plasma, a trace of coagulable protein, and a certain amount of a reducing substance which has now been definitely proved to be glucose; it is practically free from formed elements. Under various abnormal conditions the protein matter may be largely increased, or other substances than the usual ones may be added to it, such as cholesterol and choline (or a choline-like substance). It may farther have added to it various kinds of cellular structures, the differentiation between which is a valuable aid in diagnosis, and in other cases parasites of different sorts may be found. The fluid is primarily formed by the secreting cells which are so prominently found covering the choroid plexuses in the cerebral ventricles, so that this structure may be appropriately designated, as Mott first suggested, the choroid gland. The fluid is normally present at a certain pressure, and this pressure is not the result of arterial pressure passively transmitted to the fluid. The cerebro-spinal pressure, it is true, may be affected by changes in the arterial and venous pressures, but it is not dependent on them; and it may, and often does, vary quite independently of these. The true cerebro-spinal pressure is the result of the secretory pressure of the choroid epithelium cells. In other words, the cranio-spinal contents cannot any longer be regarded as a fixed quantity without the power of expanding or contracting in volume.

The rate of flow and the pressure of the fluid can be readily investigated in animals by placing a cannula in the subcerebellar cisterna and connecting it with the necessary apparatus. It is then found that there are three groups of substances which promote the flow and increase the pressure independently of those which affect it secondarily by altering the blood pressure. The first group consists of excess of carbon dioxide (or lack of oxygen) in the blood, as in asphyxia, and drugs which interfere with respiration. The second group is that of the volatile anæsthetics, which may act by interfering with the respiration or by altering the physical conditions of secretion. The third group is specific, and consists of an extract of the choroid gland, or of the brain. The former is the more powerful. The chemical nature of the hormone in this extract is uncertain, but it is probably some product of nervous metabolism, which, arising in the brain, passes to the choroid plexuses, accumulates there, and stimulates the secreting cells to activity; it cannot be discovered in the normal secretion, but in cases of general paralysis and brain softening—conditions in which catabolic processes are excessive—it can be recognised (by physiological tests) in the fluid itself. The choroid plexuses are abundantly provided with nerves, but there is no evidence that these are secretory in nature; indeed, the evidence derived from experiments with atropine and similar alkaloids points in the opposite direction. The hormone, whatever its nature, acts probably not on nerves, but on the secreting cells directly.

There is no doubt that this fluid is being continually formed, and the next question is, What becomes of it? Large quantities of a neutral fluid, such as physiological saline solution, disappear within a few minutes when introduced into the cranio-vertebral cavity, and the course taken by such fluids, and presumably also of the normal cerebro-spinal fluid, can be traced by adding some substance which can be easily recognised by its colour, or by chemical tests, or by its physiological action. Using such methods it has been demonstrated that the exit is by the blood stream, and not by the lymph channels of the nerves, which was formerly thought to be the case by a number of French observers.

If such substances are readily diffusible the speed with which they appear in the blood is very remarkable, especially if they are introduced into the subcerebellar region. An injection, for instance, of adrenaline, nicotine, or atropine produces typical physiological actions within a few seconds, in fact, almost as rapidly as if the injection had been made into the venous circulation direct. On the other hand, substances which are not readily diffusible (such as commercial peptone) do not produce their characteristic effects when they are introduced into the cerebro-spinal fluid, so that one of the older theories that actual valved orifices exist leading into the large veins at the base of the brain must be abandoned.

The diffusion process is most rapid in the subcerebellar district, but is extremely slow in the spinal, especially the lower spinal region.[1] It probably occurs into the venous sinuses by the microscopic arachnoid villi described by Weed. There is also a possibility that in addition to this transference may occur through the thin walls of the blood-vessels within the central nervous system, for, as Mott has pointed out, contact of these vessels with the cerebro-spinal fluid is maintained throughout their extent by the perivascular spaces, which are continuous with the subarachnoid cavity. Diffusion in the opposite direction from blood to cerebro-spinal fluid does not occur except in an almost negligible degree in the case of a few drugs, such as alcohol and urethane.

But in addition to this there is another and minor communication between the fluid and the other parts of the body. Dixon and I found that dyes added to the fluid travel along the course of certain cranial nerves, and this is especially true for the olfactory nerve. This is not the case for the spinal nerves; no dye can be detected in their sheaths outside the spinal canal and no dye is discernible in the lymph of the thoracic duct. I have spoken of this cranial (olfactory) outlet as a minor one, but clinical experience has shown that it is not a negligible one. For this loophole affords an opportunity for the entry of infective

[1] This is tacitly accepted by those who produce spinal anæsthesia by the injection intrathecally of substances of the cocaine group, for they recognise the danger of absorption if the drug reaches the medullary region.

agents, as Flexner has shown in the causation of infective poliomyelitis.

Such, then, is a brief and I fear imperfect summary of the present state of our knowledge, and I propose now to pass to the main object of my address, which is to discuss the meaning and functions of the fluid we are dealing with.

MEANING AND FUNCTIONS OF THE CEREBRO-SPINAL FLUID.

In the first place it can hardly be doubted that the presence of fluid within and around the structures of the central nervous system fulfil certain mechanical functions of support and pressure. That, however, does not explain why ordinary lymph would not do just as well, as it does in the majority of other organs. The relationships, however, of the brain and cord within a closed cavity are peculiar, and it may be that ordinary lymph is here insufficient to maintain a more or less constant pressure. For the pressure of ordinary lymph is wholly dependent on blood pressure; here, in addition, we have an independent pressure—namely, the secretory pressure of the choroidal secreting cells—and it is therefore quite possible that this may come into play in maintaining, equalising, and adjusting those pressure relationships which are most advantageous for the well-being and function of the brain and cord. It is further quite possible that the ameliorative effects not infrequently noticed as a result of withdrawal of the cerebro-spinal fluid by lumbar puncture may be due to the relief of undue pressure. But such considerations offer no explanation of the peculiar composition of the fluid. Its characteristic chemical composition must have a deeper meaning.

It is very common to speak of the cerebro-spinal fluid as the lymph of the brain. Let us now examine this phase more fully, and see if it has any scientific accuracy.

The Cerebro-spinal Fluid regarded as the Lymph of the Brain.

In the first place we must be quite clear as to what lymph is and what it does. It is a fluid which exudes through the thin walls of the blood capillaries. Whether lymph formation depends solely on physical conditions (filtration and osmosis), or whether in addition we have as a factor a secretory activity of the vascular lining membrane is an interesting physiological problem, which need not concern us now. The leakage fluid resembles blood plasma in its composition, except that it is comparatively poor in protein material, the diffusion of which through membranes is so difficult. This lymph, when formed, acts as the intermediary or middleman between the blood and the tissue elements, conveying to the latter on the one hand the oxygen and nutritive substances they need; and on the other hand it is into the lymph primarily that the tissues pour the waste products of their activity, and thus these are started on their journey to the organs of excretion (lungs, kidneys, &c.). The very essence of a lymph is that it should be in free communication, except for an intervening membrane, with the blood stream, and that this membrane should be equally permeable to water and other substances in both directions. The arrangement of the perivascular and perineuronal spaces, filled as they are with cerebro-spinal fluid, certainly resembles that of a lymphatic system, and therefore it is not surprising that the idea has caught on that cerebro-spinal fluid plays in the central nervous system the rôle of lymph. The peripheral nerves have a true lymphatic system analogous to that found in other organs, but anatomists are far from unanimous on the question whether the central nervous system possesses real lymphatic channels apart from the system of intercommunicating spaces occupied by cerebro-spinal fluid. The mere difficulty of discovering true lymph-vessels does not indeed finally negative their existence, but until they are satisfactorily demonstrated we may provisionally assume that they are absent. If, then, cerebro-spinal fluid is the only fluid which actually comes into contact with the tissue elements of the brain and cord, it necessarily follows that it must play the part played by lymph in other districts of the body; it must be, for example, the intermediary medium which is traversed by the oxygen on its way from blood to the tissue elements; and oxygen, we know, is essential for the continuance of nervous life and energy. Furthermore, it must be the vehicle by which other nutriment reaches the cells and fibres of nervous tissue. The next point is, Have we any evidence that the products of nerve catabolism pass into the fluid from the tissue elements as they do into ordinary lymph? If it were only possible to analyse and compare the composition of the fluid before it enters the perineuronal spaces, and after it leaves them, it would be possible to answer this question authoritatively, but in the absence of such proof one can only argue from probabilities. Seeing that the fluid is the only one available for the purpose, an affirmative answer seems inevitable, and this is supported by the fact that cerebro-spinal fluid is rich, at any rate, in one waste product—namely, carbon dioxide.

The expression "lymph of the brain" is therefore so far justifiable. But we have absolutely no proof that the cerebro-spinal fluid is in part an exudation from the blood, and it is in the origin of the fluid that the analogy between lymph and cerebro-spinal fluid breaks down. Whatever views we may hold as to whether a secretory factor comes into play in the production of ordinary lymph (and, at the best, such a factor can only be an insignificant one), we can have no hesitation in proclaiming that cerebro-spinal fluid is a true secretion arising in a definite glandular structure. Such a fluid must obviously be the best one for maintaining normal life in the nerve cells, and the whole lining membrane of the spaces in which it resides appears to coöperate with the choroid gland in maintaining its constancy of composition, and to militate against the escape into it of substances from the blood stream, such as drugs or poisons which would be foreign to the fluid or harmful to the delicate and sensitive structure which it bathes.

We have seen that the essential feature of a true lymph is the free interchange between it and the blood in both directions. This essential character is lacking in the cerebro-spinal fluid; in all probability the lining membrane of the cerebro-spinal spaces is permeable to substances passing from it into the blood, but it appears to be impermeable (except for oxygen) in the direction from the blood to the fluid. The nutritive materials the fluid contains appear to be formed in the choroid gland, and not to be merely exuded from the blood stream; otherwise one cannot explain why the protein it contains is not similar to that in the blood or in exudations (lymph) formed from the blood.

If, as Weed has suggested, cerebro-spinal fluid is partly formed as ordinary lymph is by exudation from the blood in the perivascular spaces, it is difficult to understand why readily diffusible drugs and poisons do not escape readily into the cerebro-spinal fluid as they do into ordinary lymph. The difficulty is quite intelligible when we regard the choroidal epithelium as a stalwart barrier of cells which keeps back these materials, and only allows its own normal secretion to escape. This useful work would be undermined and frustrated if the general lining were easily permeable to foreign substance.

Camus found that barium chloride, which is a very active poison to the central nervous system, will kill a rabbit of 2 kgr. weight when 1/10 mgr. is introduced into the sub-arachnoid space, whereas the lethal dose is one thousand times greater when this salt is given subcutaneously. It is well known that anaphylaxis can be produced by smaller doses of proteins administered into the brain than when given elsewhere. The use of salvarsan in locomotor ataxy and similar post-syphilitic affections *viâ* the cerebro-spinal fluid has been abandoned, as it is fatal not only to the syphilitic organisms, but also to the patient. It is further known that salvarsan and its homologues are of little or no use in tabes and general paralysis when it is given by the ordinary channels, for in these later manifestations of syphilis the baneful spirochæte has got into a harbour of refuge (which we may speak of as extravascular) beyond the reach of the poison. The stalwart epithelial layer lets none escape, and does not realise how much both doctor and patient would rejoice if it could be made to understand that in this instance at least it did not form such an effective barrier.

May I add in way of parenthesis how very desirable it is that chemists and pharmacologists should apply themselves to the solving of this difficulty? The future treatment of tabes and allied conditions should aim at the discovery of some blander arsenic compound which could be introduced straight into the cerebro-spinal fluid and kill the syphilitic organism in its lair without at the same time slaying the host who harbours it.

Significance of the Simple Composition of the Normal Fluid.

Is not the very simplicity of the normal fluid suggestive? I remember when I was a student that normal or physiological saline solution was regarded as a physiological fail-

for surgeons continued to use sponges (usually dirty ones at that time) soaked in water during operations. What a change has now come over the spirit of their dream. They have realised that water, even clean water, is a protoplasmic poison, and that osmosis is a real force and not a negligible phenomenon. I remember at about the same date witnessing, and in a humble measure assisting Dr. Sydney Ringer in his epoch-marking work on the effects of saline mixtures on living structures. The attitude of the profession generally in those days was a tolerant one, just the sort of attitude adopted by a grandfather indulgently watching his descendants playing with their toys. But who has not heard of Ringer's solution to-day? Who can write a paper on almost any physiological or pathological subject without mentioning it or alluding to the part it has played in his investigations?

Ringer's fluid is the ideal physiological salt solution; its saline constituents are present in the same proportion as they occur in the natural body fluids, and in that way the normal osmotic pressure is maintained when living structures are bathed in it. Ringer's original solution resembled frog's blood in its saline composition, but since then several modifications have been introduced. The most important of these is the one we owe to Locke, who has altered the proportion of the various salts (increasing, for example, the amount of sodium chloride from 0·6 to 0·9 per cent.), so that the fluid may be employed with success on the living tissues of the mammal. Locke has also added a small proportion of the sugar glucose, and when in use it is kept saturated with oxygen. It is well known that in such a fluid living structures can be preserved in a living condition for hours or even days and weeks. Locke's most striking results have been obtained with the mammalian heart; this can be kept beating for prolonged periods after its complete isolation from the body if it is perfused with the oxygenated fluid. The salts supply the normal stimulus to the cardiac fibres and maintain their physical integrity; the sugar acts as a source of energy and is consumed as activity continues.

Ringer's fluid, so compounded in the laboratory, is somewhat more than 30 years old. But in reality it is as old as the hills, or rather as man himself. Just as the Venus of Milo existed potentially from past ages in the block of marble from which it was ultimately hewn, so does Ringer's fluid exist in the blood and lymph, although its simple composition is obscured there by admixture with the blood proteins and corpuscles.

Here may I introduce another parenthesis and allude to another physiological puzzle, and that is the significance of the large amount of protein in the blood-plasma and lymph. The meaning and use of the blood corpuscles we understand, or at least we think we do, but the meaning of so large a quantity of protein in the blood fluid and the part it plays in nutrition is still hidden from us. The amount of protein necessary for the repair of the tissues is not great, and the modern doctrine of maintenance and growth is that the tissues help themselves, not from proteins directly, but from the various amino-acids which are the result of protein cleavage. The great protein store may be another instance of the prodigality of Nature in providing a large margin for conditions of weakness and stress. However this may be, the presence of protein is not necessary, or it may even be harmful when it is added to Ringer's or Locke's solutions in experiments with prepared organs.

But to resume the thread of our argument. Thanks to Ringer, some 30 years ago physiologists were provided with a suitable fluid for experimental work, but the choroidal epithelium knew the secret of extracting it from the blood for untold ages before Ringer was born. For what, after all, is cerebro-spinal fluid but Locke's modification of Ringer's fluid?

The view I have been led to take is—the nervous mechanism being so sensitive, so easily influenced by anything unusual—that therefore the neurons must be bathed in an ideal physiological saline solution to maintain their osmotic equilibrium; the trace of protein it contains is probably quite sufficient for nutritive processes, and is no doubt the kind of protein particularly suited to repair the small amount of wear and tear which is the result of nervous action. The sugar, just as in Locke's solution, would serve for a supply of energy. The choroidal epithelium, in its wise choice of a suitable circumambient medium for the neurons, is really exercising a protective function. In order to keep out harmful proteins (toxins and the like), the comparatively harmless ones are kept back also, almost completely; all share the same process of exclusion. This protective action applies in addition to the majority of soluble drugs; this, as we have seen, may operate so as to be detrimental in diseased conditions. But we can hardly expect discrimination on the part of the epithelial secreting cells. The non-access of metallic and other poisons to the nervous elements is such a *sine quâ non* for their health, that during those periods when such substances are given for the relief of disease, or the slaughtering of parasites, the choroidal cells are unable to change their habits and so they prevent the drugs from getting through.

Such, I believe, then, is the real significance of the simple composition of this remarkable secretion. But before I sit down I must allude, in conclusion, to some other possible additional functions which the fluid may exercise.

Other Possible Functions of the Fluid.

The late Dr. Gaskell approached the question from the embryological and developmental point of view; he held that the neural tube represents an ancestral digestive canal, and those who adopt Gaskell's hypothesis might conceivably argue that the cerebro-spinal fluid is the representative of a primitive digestive juice, and is secreted by an organ which was formerly a digestive gland. However interesting such speculations may be, one can hardly suppose that anyone could seriously urge that the cerebro-spinal fluid retains any such functions to-day.

Dendy is one of many comparative anatomists who have not accepted Gaskell's views, and he has suggested that the important function fulfilled by the choroid plexuses is that of an intracerebral gill, and is concerned in respiration. The structure of the plexuses is certainly gill-like, but it is always unwise to argue from mere anatomical resemblances. Mott, who analysed the gases of cerebro-spinal fluid, found the quantity of carbon dioxide there very high (about 60 per cent.), and there is, therefore, something to be said in favour of the respiration hypothesis. It is quite possible that the choroidal epithelium may allow the escape of, or even actively excrete, this catabolic product, and it is unnecessary to point out how severe a poison any undue accumulation of carbon dioxide is in the central nervous system. Coupled with this fact is another I have previously mentioned—namely, that carbon dioxide is one of the most potent means of promoting a flow of the fluid. Just as urea is the best diuretic and bile the best cholagogue, so carbon dioxide is one of the most powerful cerebral lymphagogues.

One further point and I have done. The ependyma is lined by ciliated epithelium. Some doubt exists, I believe, as to whether the cilia are functionally active. But if we admit they are, the question arises, In which direction do they act? This is a question which is hardly susceptible of actual observation in man or the higher animals, but in the Amnocætes which Professor Dendy has so largely used in his investigation he has brought forward evidence which shows that the movement is in a forward direction. I know it is not always wise to draw conclusions from such lowly animals, and apply them without reserve to the higher ones. There are certain cases where such deductions are quite impossible; for instance, in some of the humble fishes the central canal of the spinal cord does not terminate blindly at its posterior extremity, but opens out by an orifice into the surrounding tissues. In this case one can only speculate, and the rapidity of absorption of the fluid in the forward regions in comparison with that in the spinal district appears to favour Dendy's surmise, and the cilia, if they are active, would no doubt further the flow of fluid from the cord region to the large veins at the base of the brain, where it so readily leaves the subarachnoid space by entering the venous blood stream.

CONCLUSION.

There are doubtless other problems in connexion with the cerebro-spinal fluid that demand solution, but my task for this evening is over. My main object has been to present the thesis in which I feel there is, at any rate, some truth—namely, to regard the cerebro-spinal fluid as the perfect physiological medium, more perfect doubtless than the artificial fluids we can make in the laboratory, but in its essential features closely resembling those associated with the names of Ringer and Locke.

I think already I have said finally, or in conclusion, more than once, but will you pardon me if, like the proverbial

writer of sermons, I say it a third time, and this is really my concluding message. These are days of specialisation, but however necessary specialisation in medical science may be it has its attendant evils. Particularly regrettable is the divorce between those who pursue their investigations by the bedside and those who work in the laboratory. Neurology specially is a branch of our science in which an attempt should be made to bring about a closer *rapprochement* between the two sets of workers. Speaking personally, I have derived inestimable benefit from meeting with and hearing here the clinical side of the subject. Those responsible for the management of this section of the Royal Society of Medicine have realised this, and in having elected this year a President who is a laboratory person they have shown that they see the value of the *entente* I have alluded to; and I can only trust that my year of office may not be detrimental to those who form the larger contingent in the Neurological Section—namely, those who pursue more specially the study of disease by the bedside.

FURTHER CASES OF KALA-AZAR IN EUROPEANS SUCCESSFULLY TREATED BY INTRAVENOUS INJECTIONS OF TARTAR EMETIC.

BY SIR LEONARD ROGERS, C.I.E., M.D. LOND., F.R.C.P. LOND., F.R.S.,

LIEUTENANT-COLONEL I.M.S.; PROFESSOR OF PATHOLOGY, MEDICAL COLLEGE, CALCUTTA.

IN February last I reported, in conjunction with Captain N. H. Hume, I.M.S.,[1] six cases of kala-azar in Europeans treated with tartar emetic intravenously at my suggestion, with recovery in five, and death from complicating phthisis, after the parasites of kala-azar had disappeared from the spleen, in the sixth; and we concluded that the treatment is specific against this very serious disease. We have now been fortunate enough to be able to treat 18 consecutive cases during the last 14 months, with results which fully confirm the very sanguine expectations we formed from the smaller series of cases, while latterly we have been able considerably to shorten the time required for bringing about the cure of the disease by increasing the doses more rapidly than we ventured to do at first. Captain Hume has very generously placed his records at my disposal for the purposes of the present paper, and I am greatly indebted to him for so thoroughly and successfully testing my method of treating kala-azar with tartar emetic intravenously, which, as already recorded,[2] I first commenced to use early in 1915, quite independently of the Italian work on the African form of the disease.

In order to enable the salient points readily to be grasped and to shorten the detailed description of the cases, the principal data regarding each have been embodied in the accompanying table, which also includes the first series of cases.

Brief Notes of 12 Further Cases.

The following data are given in the table. The duration of the disease before admission; the number of days in hospital; the duration of fever after the commencement of the intravenous injections of tartar emetic and the number of centigrammes of tartar emetic injected up to the final cessation of fever; and the maximum dose of the 2 per cent. solution given and total number of centigrammes of tartar emetic while in hospital. The table shows the condition before and after the treatment as regards the size of the spleen; the weight of the patient at first and the gain or loss under treatment; the red and white corpuscles, the ratio between them before and after the injections; and the presence or absence of the parasite of kala-azar, which enable the progress obtained to be seen at a glance. The most striking features regarding the individual cases are as follows.

CASE 7.—Female, aged 32, admitted for kala-azar of eight months' duration in a very emaciated state, weighing only 83 lb. 8 oz. (5 st. 13½ lb.), while her white corpuscles numbered only 875 per c.mm. Her arm became much inflamed after an early injection of tartar emetic owing to some of the solution escaping round the vein, so antimony ointment inunctions were substituted for the intravenous injections. After three and a half months in hospital the spleen was smaller, but the intermittent fever continued, while œdema of the face and feet was present, with albumin in the urine, and the liver was much enlarged, her condition being very unsatisfactory. The intravenous tartar emetic injections were now resumed and the dose gradually pushed up to 10 c.c. of the 2 per cent. solution, which was the strength used in all the present series of cases. After 180 centigrammes had been given in the course of 46 days the temperature finally remained normal, weight was rapidly regained, the parasites disappeared from the spleen, the blood greatly improved, and she recovered her strength and went home to look after her children. She was seen again a few weeks later, when her weight was

DATA BEFORE AND AFTER TREATMENT.

Number.	Age.	Duration before admission in months.	Time in hospital.	Duration of fever.	Tartar emetic to cessation of fever.	Total tartar emetic.	Maximum dose of 2 per cent. solution.	Enlargement of spleen below ribs.	Weight on admission: Gain or loss.	Red corpuscles.	White corpuscles.	Ratio of white to red.	Parasites.	Result.
			Days	Days	cgm.	cgm.	c.c.		lb. oz.					
1	18	1½	226	64	140	149	9	To navel.	89 10	3,660,000	2,000	1-1830	+	Cured.
								Just felt.	+16 4	5,050,000	8,500	1- 676	—	
2	28	5	64	45	96	124	8	To navel.	109 8	2,990,000	1,375	1-2170	+	,,
								2 in.	+17 12	...	...	...	—	
3	23	6	372	...	51	56	4	3½ in.	91 0	2,960,000	1,125	1-2631	+	Died of pulmonary phthisis.
								1 in.	— 3 0	3,220,000	1,125	1-2862	—	
4	36	12	214	35	78	326	10	To navel.	96 10	3,850,000	1,125	1-3422	+	Cured.
								1 in.	+22 4	5,160,000	10,250	1- 503	—	
5	38	9	195	59	73	307	10	Navel + 1 in.	101 14	...	2,000	...	+	
								Just felt.	+ 7 12	5,120,000	6,750	1- 578	—	,,
6	28	4	229	145	332	580	11	8 in.	108 0	3,430,000	1,000	1-3430	+	
								2 in.	+15 12	3,500,000	6,500	1- 538	—	,,
7	32	8	179	56	180	250	10	2½ in.	83 8	1,740,000	875	1-1989	+	
								...	+31 0	3,500,000	6,250	1- 560	—	,,
8	13	4	188	83	124	314	8	To navel.	48 10	3,420,000	500	1-6840	+	
								Just felt.	+24 2	5,050,000	5,250	1- 918	—	,,
9	38	18	73	...	...	243	10	Navel + ½ in.	132 4	4,240,000	3,125	1-1397	+	Improved.
								Smaller.	— 1 4	4,150,000	5 000	1- 880	...	
10	13	3	161	123	223	243	10	4 in.	63 4	4,090,000	2,375	1-1722	+	Cured.
								2 in.	+14 12	5,010,000	4,250	1-1178	—	
11	17	3	114	51	66	254	10	Navel + ½ in.	103 2	...	...	...	+	
								1½ in.	+ 4 6	4,480,000	5,500	1- 600	—	,,
12	47	3	97	23	90	382	10	1½ in.	106 4	3,620,000	1,125	1-3218	—	
								Not felt.	+24 0	4,380,000	6,000	1- 726	—	,,
13	20	1	144	42	75	362	10	4 in.	76 8	3,620,000	1,125	1-3218	+	
								Not felt.	+18 0	4,690,000	9,250	1- 507	—	,,
14	48	3	36	35	188	...	10	1½ in.	...	3,940,000	1,500	1-2627	+	Greatly improved
								...	...	5,040,000	2,000	1-2520	...	
15	45	6	35	...	...	68	5	3 in.	91 0	2,540,000	750	1-3387	+	Improved.
								2 in.	+ 6 0	...	...	...	...	
16	17	3	85	20	206	434	10	3½ in.	83 0	3,500,000	2,125	1-1647	+	Cured.
								Not felt.	+ 7 0	5,210,000	10,250	1- 508	...	
17	36	9	...	13	42	...	10	6 in.	100 8	3,020,000	1,375	1-2197	+	,,
								Not felt.	...	5,570,000	4,000	1-1392	...	
18	30	4	...	36	86	...	10	2 in.	...	3,830,000	3,750	1-2197	+	Greatly improved

found to have increased by 31 lb., or more than one-third of her original weight. This is one of the most remarkable recoveries I have ever seen in a very long experience.

CASE 8.—Male, aged 13. He had suffered from fever for four months and weighed only 48 lb. 10 oz., being very emaciated. Spleen down to the navel and leucocytes only 500 per c.mm. He was treated with antimony inunctions for a month without much effect. Tartar emetic injections were then commenced and gradually pushed up to 7 and 8 c.c., but as vomiting resulted it was reduced to 4 c.c. after the temperature had fallen to normal. After 13 doses containing a total of 124 cgm. had been given in the course of 83 days the fever finally ceased. On discharge from hospital two months later he had gained 24 lb. 2 oz., an increase of almost exactly 50 per cent. on the original weight. The spleen could only just be felt, the blood was normal, the leucocytes having increased more than ten-fold, and the parasites had disappeared from his spleen. Such data speak for themselves.

CASE 9.—Male, aged 38, who had suffered from fever for 18 months. He remained in hospital for 73 days and received a total of 243 cgm. of tartar emetic intravenously. When the dose reached 10 c.c. he suffered from sickness and lost the little weight he had gained, and he left hospital against advice while still suffering from an occasional rise of the evening temperature to 99·4° F., although his blood had improved and his spleen was smaller. We have not been able to obtain news of his subsequent progress.

CASE 10.—Male, aged 13, who had suffered from fever and spleen for three months. Small doses of tartar emetic were given during the first two months without much improvement. They were then pushed up to 10 c.c., a very large dose for a boy weighing only 63 lb., but except for cough immediately after the injection no toxic symptoms appeared. When he had received a total of 223 cgm. in the course of 123 days his fever finally ceased and he gained weight steadily, putting on 14 lb. 12 oz. before he left hospital, while the parasites had disappeared from his spleen, which was much smaller, and he had become well nourished. He has been recently discharged cured.

CASE 11.—Male, aged 17, who had suffered from fever and spleen for three months. Soon after the tartar emetic treatment was begun he had an attack of pneumonia, which interrupted the treatment for a month. When he had received 66 cgm. in 51 days the fever finally ceased and he began to gain weight, but he left hospital three weeks later very much improved. He reported himself some time later, and had suffered from no more fever, had gained weight considerably, and was quite well.

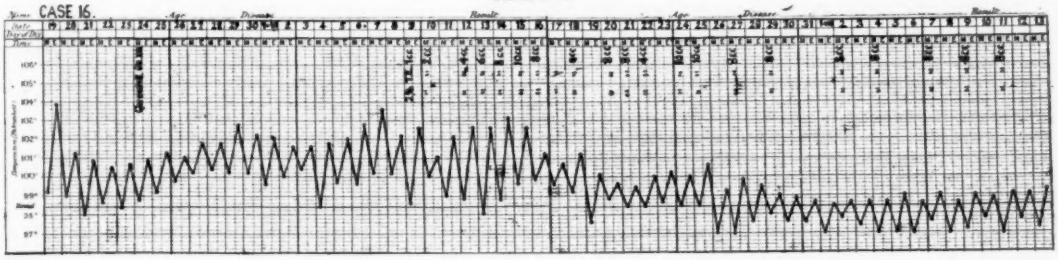
CASE 12.—Male, aged 47, who had suffered from spleen and fever for three months. In this case no parasites were found on spleen puncture (the only one of the 18 cases not so verified), but he had only 1125 white corpuscles, or a ratio of 1 to 3218, which I have previously shown to be characteristic of kala-azar,[3] as was his clinical condition. In this case the amount of tartar emetic was rapidly pushed up by increasing the dose by 2 c.c. every other day until 10 c.c. was reached. The result was most satisfactory, as when a total of 90 cgm. had been given in the course of 23 days the fever finally ceased and he put on weight with great rapidity, actually gaining 24 lb. in 37 days, and he returned to work fat and well three months after his admission. He has been seen recently, nearly two months after his discharge, and has had no return of fever, has gained another 6½ lb. in weight, his blood is normal, and he is quite well.

CASE 13.—Male, aged 20, with a history of fever for one month. He received 75 cgm. of tartar emetic intravenously in 42 days, when his fever finally ceased. The injections were continued for another two months, by which time a total of 362 cgm. had been given. He had now gained 18 lb. in weight, the leucocytes had increased from 1125 to 9250, and his spleen could only just be felt, although it had extended 4 inches below the costal margin on his admission. The parasites had also disappeared from his spleen, and he has recently been discharged cured.

CASE 14.—Male, aged 48. Admitted in a very weak condition with kala-azar for three months. He had remittent fever, which for two weeks ranged from 102° to 104° and 105°, but fell to normal and a low intermittent type when the doses of tartar emetic had been pushed up to 8 c.c. The treatment was interrupted by an abscess at the elbow, and he now had some fainting fits and on one occasion loss of consciousness for a minute. After he had received 188 cgm. in 35 days the fever finally ceased. He has now been free from fever for eight weeks and is gaining weight steadily and has every prospect of completely recovering from a very grave condition. He was too ill to be weighed until recently.

CASE 15.—Male, aged 45. Admitted for kala-azar of six months' duration. He was exceedingly nervous over the injections, and after receiving 63 cgm. in 16 days, the maximum dose being 5 c.c., he felt unable to go on with the treatment and left hospital. He had improved distinctly, having gained 6 lb. in weight, but still had slight fever, so it is doubtful if the improvement will be maintained in the absence of continued treatment. We have not been able to obtain news of him since he left hospital.

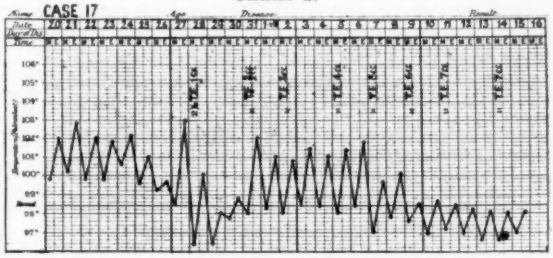
CHART 1.



CASE 16.—Female, aged 17, who had suffered from kala-azar for three months. In this case the doses were also rapidly increased by 2 c.c. up to 10 c.c. and given daily at first, but as the 10 c.c. doses caused much sickness it was reduced again to 8 c.c. The rapid fall of the temperature which resulted is illustrated by Chart 1 and it became normal 20 days after the tartar emetic was commenced, when a total of 206 cgm. had been given and she began to put on weight. The red corpuscles have now reached normal, while the leucocytes have risen from 2125 to 10,250, and the spleen, which extended 3½ inches below the ribs on admission, is no longer to be felt. As she has now been quite free from fever for two months there is every prospect of her permanent recovery in a shorter time than in any of the cases described above. She has just been discharged from hospital.

CASE 17.—Male, aged 36, who had suffered from fever and enlarged spleen due to kala-azar for nine months and was in a bad condition on admission. This patient also responded in a remarkable way to rapidly increasing doses every second and third day as shown in Chart 2. After 42 cgm. had been given in 13 days the temperature remained normal, except for a temporary rise due to inflammation of his arm from an escape of a little tartar emetic around a vein. He has put on 23½ lb. in four weeks, and his spleen has decreased from 6 inches below the ribs until it is only just felt. This is the most rapid improvement we have yet seen, and, taken with Cases 12 and 16, indicates that by the more frequent injection of rapidly increasing doses to the point of tolerance kala-azar patients are likely to be cured much more quickly than we previously thought to be possible.

CHART 2.



CASE 18.—Male, aged 30. Admitted for kala-azar of four months' duration in an emaciated condition. After he had received 86 cgm. of tartar emetic in 36 days the fever ceased. He has recently had an attack of dysentery, which yielded to emetine, and he is beginning to pick up again, but he has

not been long enough under treatment to say more than that he is much improved, but is included to complete the series of cases treated up to date of writing.

Further Progress of the First Series of Cases.

The following is all the information we have been able to obtain of the progress of the first series of cases since they were reported in the former paper. No. 1 has been seen recently, just over a year after his discharge from hospital, and he remains in perfect health and full work. No. 2 was last seen six months after leaving hospital, when he was quite well and his spleen had receded beneath the costal margin, although 2 inches below it on his discharge from hospital. No. 3 died from phthisis as reported. Nos. 4 and 5 have not been heard of recently. No. 6 was still in hospital when we last reported; he was discharged cured four months ago, and has been seen recently in perfect health. Thus no case we have been able to follow up to from four to 12 months after discharge from hospital has relapsed.

Discussion of the Cases.

Technique of the injections.—There is little to add to what was said in the former paper[1] regarding giving the injections. It will be noted that the progress of several cases was retarded owing to an escape of some of the solution around the veins causing severe inflammation and abscess formation usually at the bend of the elbow. The only way to avoid this unfortunate complication is to distend the veins fully by a tight bandage or an elastic band stretched round the upper arm and one end passed in a loop under the other or the ends clipped together, so that it can be rapidly loosened by pulling out the loop or releasing the clip. The vein is then punctured through the skin with a fine sharp needle, taking care not to perforate the posterior wall, and a few drops of blood drawn into the syringe to make sure the needle is in the vein, the constriction round the arm released, and the solution slowly injected. If pain occurs or the smallest swelling appears round the vein stop the injection and suck out as much fluid as possible with the syringe. Collodion on cotton wool may be applied over the puncture. If the veins are difficult to distend by a bandage or rubber tubing the air bag of a blood-pressure instrument may be used for that purpose, the pressure being released before the injection is made. If any of the solution does escape around a vein severe pain occurs at once, which may require morphia for its relief, much induration takes place and sometimes suppuration.

Dosage.—The only alteration we have made in the doses is to increase them more quickly than in the first series of cases. In view of the very rapid improvement which followed this procedure in Cases 12, 16, and 17 we now recommend in adults to begin with 4 c.c. of the 2 per cent. solution of tartar emetic, to add 2 c.c. at the second injection, and, if no toxic symptoms occur, 1 c.c. from that point to 8 or 10 c.c., above which it is not necessary to go. If toxic symptoms arise, other than cough, immediately after the injection, the dose should be reduced until no sickness or nausea occurs, as body weight may be lost as a result of repeated sickness from too large doses. The earlier doses may be given every other day, but when the full dose which is well tolerated is found one injection every three days will suffice.

Toxic symptoms.—Sickness is the most important toxic sign, and its occurrence is an indication for reducing the dose. No serious symptoms have resulted from the large doses given in this series of cases, unless the fainting fits in Case 14 were predisposed to by the drug. Cough just after the injection is common but unimportant. In patients with dropsy or albumin in the urine the dose should be increased cautiously.

Duration of the treatment.—In all except the last five cases and those who left hospital at their own request the injections have been continued for from several weeks to two or three months after the fever had ceased, and only stopped, as a rule, when the body weight had much increased, the spleen become considerably reduced, the blood had approached or reached the normal as regards both the red and the white corpuscles, and the parasites had disappeared from the spleen. This precaution was adopted in view of the great chronicity of sporadic kala-azar, and it has been fully justified by the fact that none of the cases we have been able to follow up for from several months to a year after leaving hospital have relapsed, while most of the patients are in full work. The question now arises as to how far we have gone on the safe side and whether the duration of the treatment may not be safely reduced. I have previously pointed out[3] that once a patient, who had become emaciated as a result of kala-azar, loses his fever for a long time and becomes well nourished, the disease does not recur. This experience is amply confirmed by that of over 20 years' experience of Mr. Dodds Price in Assam, who still has scores of coolies doing full work on tea-gardens years after their recovery from advanced kala-azar. An analysis of the present series of cases shows that in nearly all of them the fever finally ceased after from 5 to 12 doses of 5 c.c. and over of the 2 per cent. solution, and that this was first followed by rapid gain in weight and then by diminution in the size of the spleen and great improvement in the condition of the blood. The second spleen puncture, showing the absence of the parasites which had been found before the treatment was begun, was only done after great clinical improvement had taken place, so I am not in a position to say how soon they disappear after the treatment. With the more rapid increase of the dosage adopted latterly Case 16 left hospital apparently cured 65 days after the treatment was commenced, while Case 17 is in an equally satisfactory condition 50 days after the first injection, although he was admitted in an advanced stage of the disease after nine months' fever. In these two cases the injections were continued throughout these periods of time, although the fever ceased after 20 and 13 days respectively, and as the injections of tartar emetic in non-toxic doses appear to have an excellent tonic effect in kala-azar, we advise the adoption of the plan which has proved so eminently successful in these two cases, as can be seen by a glance at Charts 1 and 2, although further experience may show that an even shorter course may be equally efficient.

Effect of the treatment on the fever.—Column 5 of the table gives the number of days after the tartar emetic injections were commenced before the fever finally ceased, while column 6 shows the number of centigrammes of tartar emetic given within that period. In Case 6 the time was greatly prolonged by abscess formation at the elbows, while in Case 10 during the first two months only small doses, but once reaching 5 c.c., were given as he was a poorly developed boy of 13 years. When the dose was increased to from 6 to 10 c.c. the fever finally ceased in five weeks. In Case 8 small and infrequent doses were also given during the first seven weeks owing to his youth, and antimony inunctions were also used. When the doses of tartar emetic were increased to from 5 to 8 c.c. the fever ceased within a month. The same is true of No. 1, in whom the doses were very cautiously increased, but after he had received seven injections of from 5 to 9 c.c., the fever stopped for good. All the evidence then indicates the advisability of rapidly pushing up the doses to from 6 to 10 c.c., or the highest dose short of 10 c.c., which is well tolerated, when the fever may be expected to be controlled after from five to ten doses, given every third day, or within about a month.

Effect on the blood.—The condition of the blood on admission and again at the end of the treatment is shown in columns 11 to 13. A considerable degree of anæmia was present in nearly all the cases on admission, while on discharge the number of red corpuscles was nearly or quite normal in all but three, in one of whom (No. 7) they had increased from 1,740,000 to 3,500,000. Of still more interest and importance is the uniformly great increase of the white, the great reduction in which kala-azar has been shown by the writer[3] to be of the utmost diagnostic and prognostic significance. On admission, in no less than 13 of the cases the white corpuscles only numbered from 500 to 2000 per c.mm., while in nearly every case on discharge they had risen to within the normal limits, and in two cases they exceeded 10,000. Such an increase, when not due to a temporary inflammatory condition, is one of the surest signs of the recovery from kala-azar. It does not appear to a marked degree until after the temperature has been normal for some time, so I regard it as a sign of the cessation of the struggle between the parasites and the phagocytes, owing to the former being destroyed by the tartar emetic, allowing the replacement of the lost leucocytes by the normal reparative powers of the system. No case in which the leucocytes have reached the normal has relapsed in our experience, so that a normal leucocyte count is likely to prove a reliable indication for stopping the injections of the

antimony salt. The increase of the ratio of the white corpuscles to the red from the very low figure of less than 1 to 1500, which is usually present in active kala-azar, to within the normal limits of from 1 in 500 to 1 in 1000 is also a very favourable sign.

The effect on the spleen.—The extent to which the spleen reached below the costal margin before and after the treatment is shown in column 9 of the table. Pain is occasionally felt in the spleen after the tartar emetic injections, but little change in the size of the organ appears, as a rule, until the temperature has been normal for some time. When the patients can be kept under observation for another two or three months the spleen becomes much reduced, so that instead of extending to about the navel it may nearly or even completely disappear beneath the costal margin, as in several of the cases in the table. In addition some of the patients have been seen some months after discharge from hospital with their spleens still enlarged, and at the later date it had disappeared beneath the ribs. In some, such as Nos. 16 and 17, it had receded beneath the ribs, so could not be conveniently punctured to ascertain if the parasites had disappeared. The rapid improvement, however, left no doubt in my mind on this point.

Effect on the parasites.—It will be observed that in the great majority of the patients the parasites were found to be absent from the spleen before the patients left hospital, although in all but No. 12 they had been found by spleen puncture before the tartar emetic treatment was commenced. The exceptions are Cases 11 and 15, who left hospital at their own request before a second spleen puncture had been made, and Case 16, whose spleen had risen to beneath the ribs, while the other cases are still under observation in hospital. This evidence completes the proof of the curative action of the drug.

Effect on the body weight.—The rapid gain in body weight by these emaciated subjects as soon as the fever ceases is perhaps the most remarkable and promising feature of the treatment, as shown by the figures in column 10 of the table. Thus Case 8 increased his original weight by almost exactly 50 per cent. in under four months, while Case 7 put on 31 lb. in 77 days, or 36 per cent. of her original weight. No. 12 put on 24 lb. in 37 days, while Case 17 has increased by 23½ lb. in 27 days. Bearing in mind what we have already said regarding the good prognostic significance of a great improvement in the nourishment of kala-azar patients, we regard this result of the tartar emetic treatment as one of the best proofs of its specific action in the disease.

Summary of the Results.

The following figures show briefly the results obtained in the 18 consecutive cases we have treated, which includes every case available in Captain Hume's wards during the 14 months we have used this treatment in the Calcutta European Hospital. Cases are entered as "cured" when the fever has completely ceased for two or more months, together with considerable gain in weight and a restoration of the blood, and especially of the white corpuscles, to the normal and decided diminution in the size of the spleen. This class includes 13 cases. In the two entered as "greatly improved" the temperature has been normal for several weeks, but the general condition has not yet shown that degree of improvement which we recognise as a safe sign of complete recovery. Both are still under treatment with very good prospects. Both the cases entered as "improved" left hospital at their own request before they had received adequate treatment, in one of whom full doses had not even been nearly reached, so that the method had not had a fair trial. One patient died from phthisis after the kala-azar parasite had disappeared from his spleen. The only case in which the treatment might be considered to have failed was No. 15, as the patient said he could not stand the intravenous injections, being a very nervous subject.

Table of Results.

Cured	13	... —
Greatly improved ...	2	... In hospital still.
Improved	2	... Left hospital prematurely.
Died	1	... Died from pulmonary phthisis.
Total	18	

When we remember the most reliable data we have regarding the mortality of kala-azar under careful and prolonged treatment—namely, the cases of my friend Mr. Dodds Price on Assam Tea Estates, showing a mortality of 96 per cent. at the beginning of the outbreak in the Nowgong district and of 78 per cent. after the epidemic had died down in the district—the above results are so remarkable that it is difficult to find a parallel case in which such a deadly and lingering disease has been brought under complete control by a simple medicinal remedy. (In view of these results I would suggest that the use of tartar emetic appears to be worthy of further study in human trypanosomiasis and sleeping sickness in Africa.) Moreover, it has been shown by Mr. Dodds Price and the writer [4] that kala-azar has been completely eradicated from the tea estates of the Nowgong district (all of which are now completely freed of the disease, although it had lingered in two of them for 20 years) by the writer's segregation measures, the efficiency of which was first established before even the parasite of the disease was known.[4] Still further, the progress of the terrible epidemic, which carried off one-third of the inhabitants over some 200 miles of Assam south of the Brahmaputra river, has for long ceased; the segregation and other measures which I recommended in my report on kala-azar of 1897 having proved successful in dealing with the disease in the few villages which became infected in the Golaghat district to the east of Nowgong, as shown by Major T. C. McCombie Young, I.M.S., Sanitary Commissioner of Assam,[5] with good prospect of checking the further spread of the disease through important tea districts. This terrible disease, with its almost unequalled mortality and long-drawn-out sufferings, has thus been rendered amenable to a remarkable degree to both prophylactic and curative measures, largely as a result of the nearly continuous researches of the writer throughout the past 20 years.

Bibliography.—1. Brit. Med. Jour., Feb. 26th, 1916. 2. Ibid., July 31st, 1915, p. 197, and Indian Medical Gazette, October, 1915, p. 364. 3. Fevers in the Tropics, Milroy Lectures on Kala-azar. 4. Trans. Med. Chir. Soc., vol. lxxxii., 1898. 5. Indian Medical Gazette, 1914, p. 301.

DENTAL DISEASE IN NURSING WOMEN:

A NOTE ON THE ASSOCIATION BETWEEN ORAL SEPSIS AND DEFICIENT LACTATION.

BY HAROLD WALLER, M.B., B.C. CANTAB.

THE far-reaching effects of sepsis occurring in connexion with the teeth have been so often described that it may be felt that anyone proposing to arouse fresh interest in this well-worn theme must have something entirely original to say before a hearing is deserved. While no claim to originality can be made for the contents of this article, yet it is felt there is still one aspect of the subject which has received less notice than its importance deserves. The particular effect of dental disease referred to is a general lowering of health—a result which in child-bearing women manifests itself by a failure in their power of lactation. It is at once evident that in this particular connexion the disease is capable of producing ill-effects of wider distribution than is usually included in the lists of its commonly accepted disadvantages.

To suggest that dental disease militates against successful breast-feeding is not to suggest that it is responsible for all instances in which the child fails to thrive on the breast milk. It is common for a failure of lactation to be produced in a woman, healthy in all respects, by neglect of the physiological requirements which govern the secretory tissue of the breast. The custom of suckling the infant at frequent intervals is intimately concerned with this type of failure, but it is the method and not the milk which should be blamed. Another source of error is the deduction that the milk is at fault from the restless behaviour of an over-clothed and under-ventilated child. Such mistakes are still responsible for the institution of a great deal of bottle-feeding, and must be corrected before it is possible to form any true opinion of the potential capacity of the lacteal glands. Even so, when the management of the baby and the feeding arrangements are arranged to fulfil the physiological demands of lactation as well as of infant digestion and bodily comfort, there remains a number of cases where the child fails to thrive. Dissatisfaction with the breast-feeds and vomiting are often early symptoms in the child of such a failure. The vomiting

is of an intractable type, variable from day to day, sometimes interrupting the feed, sometimes following shortly after its conclusion; at others interfering with sleep and accompanied by attacks of screaming which may last for hours. The vomiting has a tendency to be frequent, copious and forcible, and the woman rightly concludes that her milk disagrees with the child. The mother of such an infant may present a frail, unhealthy appearance, and it is not uncommon to find that the child is under-sized and that, notwithstanding the correspondence with calculated dates, the birth is thought to have occurred prematurely. In marked cases of the type under discussion there may be observed in the child a persistent blueness of the extremities, quite foreign to one whose diet and digestion are in accord. Where a record of the gain in weight is kept it will be found to proceed at an unsatisfactory rate. It may be that a child several weeks old is no heavier than at birth; or, even when allowance has been made for the reading of the midwife's scales, and they must surely be as elastic as those of fishermen, that there has been a loss of flesh. The association of so many unsatisfactory symptoms can hardly fail to attract attention. But in other instances there is nothing very striking in the woman's appearance to suggest that she is not healthy, though her infant's progress is far from satisfactory.

I have learnt to attach importance in such cases to the presence of oral sepsis in the mother, and it is well to remember that leading questions about the condition of the teeth seldom afford enlightenment. But it will be found that if inquiry is directed to the metastatic effects of oral sepsis positive evidence is given unsuspectingly. Thus, it is common to be told that the woman is rheumatic and is subject to recurrent sore-throat, that she "suffers with her head," or that she constantly wakes in the morning with a bad taste in the mouth. Attacks of neuralgia, stiff neck, swollen face, or "gumboils" are sometimes admitted. Indigestion, vomiting, loss of appetite, and a decline in weight and strength are symptoms often volunteered. Examination of the mouth suggests most strongly the probable etiology of many of these complaints. From a superficial inspection it is often obvious that good general health is incompatible with the conditions found there. Caries of long standing, dead teeth, broken roots regarded as harmless and often covered by plates, the openings of sinuses from which pus can be expressed in quantity, loose teeth with a copious discharge arising from their alveolar insertions—all these are of common occurrence. A chronically infected state of the tonsils must necessarily be added to the list. It is unfortunately common to hear that such patients have for years relied on medicinal remedies for their debility and anæmia.

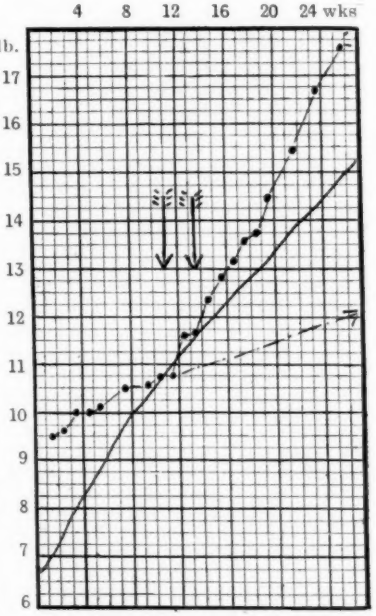
Presenting greater difficulty, but often of equal importance, are the cases where elaborate architectural devices have been built up, and where the mouth contains a number of gold-crowned teeth; for despite their cleanly appearance they do not always, in point of fact, rest on sound foundations. The very form of their construction sometimes serves to imprison disease which has progressed beneath. So also may the costliness of their erection prove a serious hindrance to their alteration or removal. In such cases the knowledge of an expert and impartial dentist may have to be supplemented by skiagrams before the point can be settled.

There would be little object in thus referring to the familiar aspects of a well-known and prevalent disease were it not comparatively easy to show that its ill-effects in nursing women are not confined to the mothers themselves, but are of considerable importance to their children. The real importance of the question lies in the chance which treatment offers of effecting a sufficiently rapid improvement in a woman's health to raise her powers of lactation from a subnormal to a satisfactory level, and so of avoiding the need to rear her child by hand with all the difficulties, dangers, and expense which this process entails. If a change of such unquestioned benefit can be conferred by the removal of dental disease, a tenacious attachment to infected teeth can no longer be regarded simply as a matter of individual preference, to be respected on grounds of personal liberty. The prevalence of the condition must, on the other hand, be recognised as a very disastrous one, claiming attention on national grounds of the first importance in view of the interference it produces with the course of infant welfare. If the sceptic is inclined to think that too much is being made of a trivial subject, let him notice how infrequent are digestive disturbances and intestinal disorders in breast-fed infants whose mothers are the possessors of perfect teeth.

My own experience has led me to believe that if the removal of dental disease is adequately carried out, even after it has produced symptoms such as have already been mentioned, improvement in the woman's health is sufficiently rapid and substantial to be of signal benefit to her child. But for purposes of evidence a more reliable objective standard is required, and the child's rate of gain in weight provides the most trustworthy guide. Two changes should follow treatment if its effect on a woman's general health is sufficient to influence lactation: (1) the rate of gain in the child's weight should be accelerated, and (2) the length of time over which nursing can be carried out should be prolonged.[1] The demonstration of these two results, either separately or in conjunction with one another, is necessary to substantiate the claim to importance which has been made. They will be reinforced if accompanied by other symptoms in the child of a more satisfactory diet, such, for example, as the cessation of vomiting and willingness to sleep for long intervals between the meals. The mother should also become aware of an increase in the flow of milk. Three cases exemplifying these features will be described.

CASE 1.—The second child of a woman, aged 21, was brought to an infants' consultation at the age of two weeks. The child was above the average in weight and looked healthy. The mother was of frail appearance with a sallow complexion, and in manner anxious and overwrought. She complained of loss of appetite, pains in the head, and inability to sleep. Her first child had been breast-fed for 10 months with success. The second was also being suckled, but cried unduly and vomited the milk from time to time. An unhealthy condition was present in the woman's mouth; above the broken stump of an upper incisor was the opening of a sinus from which pus escaped freely on pressure. The scars of other openings were visible above the position of a tooth which had been broken and over which the gum had united. The removal of the defective teeth was urged, but arrangements for this could not be made for several weeks. Meanwhile the child's gain in weight became unsatisfactory. Reference to Chart 1 will show that by the end of the twelfth week he had lost the initial advantage which he held over the average child at birth. The mother's health was visibly deteriorating, and with lack of sleep and the

CHART 1.



Case 1.—Weight curve of child. The continuous line is Budin's curve. The interrupted line gives the record of the child's weight. The arrows denote the extraction of maternal teeth: three in the first case, two in the second. The direction of the interrupted line before the extraction would lead to a weight of 14 lb. at one year, after the extraction to one of 22 lb.

[1] In Budin's curve we have a standard which may conveniently be used for the first point in providing an average rate of progress in a child's weight during the first year of life. The normal period of lactation is not easy to fix; as Forsyth has shown, it depends to a large extent on tradition. In one of the cases quoted later it will be noticed that the orthodox period of eight months is exceeded. All this means is that the child was spared for longer the necessity of drinking cow's milk—a fact that can scarcely be stigmatised as "unnatural."

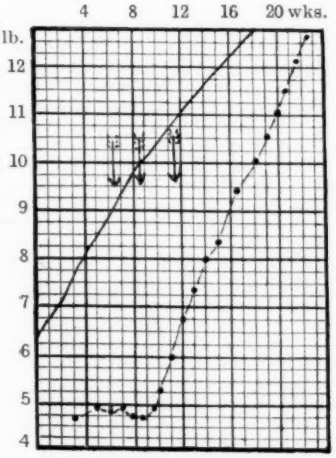
continued fretfulness of her infant she had become depressed and careworn. The prospects of successful breast-feeding had begun to appear altogether unfavourable, and the child to show a definite aversion to the breast milk, when she attended for dental treatment at the London Hospital. Three teeth were extracted when the child was 11 weeks old and two a fortnight later, the mouth healing quickly. Improvement in the health of both mother and child followed at once and the weight curve is seen to rise. Test meals were taken on several different occasions. Before removal of the teeth the child was found to gain 4 oz. in weight in the course of each of three meals. At weekly intervals from the fifteenth week the weights registered at the feeds were 8, 7½, 7½, 8, 6¾, 8½ oz., and at the twenty-sixth week 10 oz., by which time the weight was 2½ lb. above the average calculated by Budin's curve. The infant's progress was almost uninterrupted up to the age of a year. Breast-feeding was discontinued during an attack of varicella at the eleventh month, and half-a-pint of cow's milk given instead, with a diet of mixed food.

It is interesting, and perhaps not unduly fanciful, to speculate on the alternatives to this course. To start with, her own teeth were almost the only thing the woman had not thought of blaming for her baby's misdemeanours, so that she would not instinctively have sought the right treatment, in which case it is scarcely conceivable that by means of breast-feeding she would have succeeded in keeping the child in health. Had the baby continued to gain in weight at about the same rate as that recorded during the first three months the curve would have reached at 12 months a height approximately of 14 lb. The actual weight at that age was 22 lb., representing a gain of 8 lb., or more than a third of the total body weight. Much more probably bottle-feeding would have been installed about the fourth month, a plan associated with much risk in this particular household, but inevitable, if the powers of lactation continued to decline. The mother's health, meanwhile, would have been left to fare as best it could.

Failure of lactation in this kind of case is often attributed to the woman's lack of food, and doubtless there are instances in which it is true; but the appearance which gives rise to the diagnosis of starvation is, in reality, more commonly produced by toxæmia, followed by failure to assimilate food and loss of flesh. To increase the food-supply alone is of little or no use. Removal of the cause of ill-health will often show, on the other hand, as in the above instance, that the available food-supply was adequate in the absence of sepsis.

CASE 2.—The first-born child of a woman aged 29, whose health was poor during the first three months of pregnancy, but improved towards the end. Labour took place at full term without complications. The child was a small one at birth, and was brought to the consultation when three and a half weeks old. The woman's appearance was not unhealthy; she had a good colour and described herself as feeling well. The infant, besides being much under-sized, appeared also to have wasted. The skin generally was of an unhealthy, sallow tint, except towards the extremities. Both hands and feet were deep purplish-blue and cold. The breast milk had been given since birth. The flow was copious, the "draught" being felt frequently and milk escaping from the breasts between the feeds. The child vomited frequently, sometimes when feeding, and sometimes at the end of the meal. On other occasions the milk would be retained for an hour or more and then be forcibly rejected.

CHART 2.



Case 2.—Weight curve of child. Lines as before. The arrows indicate the extraction of eight teeth, twelve teeth and four roots, and eight teeth respectively.

Intervals of three and four days elapsed between the action of the bowels. Alterations in the hours of feeding were made until treatment could be arranged in the dental department, but they produced no improvement. The dentist reported that nothing less than radical extraction of every tooth could hope to affect the grave sepsis which was present. The gums were swollen and in some places almost covered the crowns of the teeth, many of which were loose, with pus oozing round them. Caries had long since wrought havoc throughout the mouth and a number of sinuses existed. The patient agreed to the proposal and the dates of the extractions are entered on Chart 2. The child's vomiting ceased almost at once, a daily movement of the bowels was established, and a steady gain in weight followed. Despite her edentulous condition, which made eating difficult, a marked improvement in the mother's health also took place. It is interesting to note that the child did not gain weight until the majority of the teeth had been extracted. Within a few weeks the child's skin improved in colour and the extremities lost their abnormal purple tint. The weight, which had been almost stationary at 5 lb. from the third to the tenth week, rose to 10 lb. between the tenth and eighteenth week.

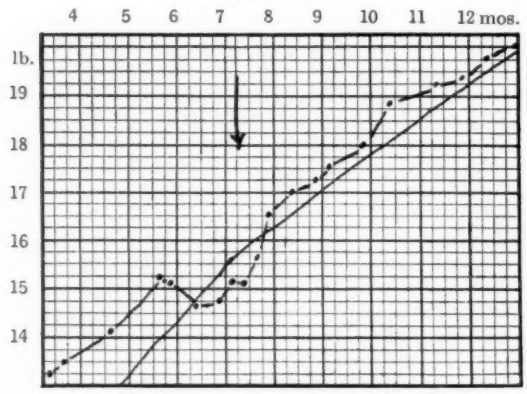
In this instance it is significant that the milk was not deficient in quantity before the teeth were removed. But the child's vomiting was not caused by taking excessive amounts, for the plan was tried of allowing short feeds of a few minutes only. The milk was still vomited. Moreover, extraction of the teeth could not be expected to lessen the flow, yet vomiting ceased with the diminution in the sepsis. The presence of organisms in the milk was suspected, but cultural examination disproved this. It must be presumed that the milk was rejected on account of some toxic properties, and the details given will serve to emphasise how closely the infant's behaviour resembles that seen in cases of obstruction due to spasmodic closure of the pylorus. The apparent paradox of a child starving itself to death in the presence of a copious supply of its mother's milk is rendered clear if it can be proved that the food contains some virulently toxic substance. Oral sepsis in the mother is not, so far as I am aware, at all frequently suspected as the underlying cause of such misdemeanours in the baby. There is a passage in Still's writing [2] which seems to apply very accurately to the kind of case under discussion: "Sometimes where the infant was wasting considerably in spite of an ample supply of milk, I have found that as far as ordinary analysis could show the milk was perfectly good; nevertheless the substitution of hand-feeding, partly or entirely, has been followed by immediate improvement. I have no explanation to offer for this occurrence, but it suggests that there are subtler constituents in milk than proteid, fat, and sugar." Some source of toxæmia such as is here suggested would appear to supply an explanation of the symptoms as well as of the improvement which followed a change in the milk-supply.

CASE 3.—A woman, aged 37, sought advice about her seventh child, aged 14 weeks. All the other six were alive. They had been difficult to rear, for breast-feeding had never been successful for more than three months. The majority had required artificial feeding during the second month. One had been hand-reared from birth. Questions elicited the following facts. During the lying-in period the milk was always plentiful after all her confinements, but within a few weeks the child habitually preferred the left breast to the right. The "draught" gradually ceased to be felt on the right side, and suckling was continued from the left side only. At or about the sixth week the left breast would fail to satisfy the child's needs and would be supplemented by bottle-feeds. This measure was always followed by the complete failure of lactation. This, or slight variations of it, is an extremely common sequence of events, though its mention is usually withheld. The left side is preferred by the child because it is habitually carried on the left arm, and is awkwardly held by the right. The right breast ceases to secrete from lack of regular stimulation; the left fails from being overtaxed. In this instance the woman was advised to use both breasts at each feed, making the child take the right before the left. A small quantity of cow's milk was ordered after each feed to ensure the child's satisfaction and so enable a proper interval to elapse between the meals. The plan was adopted with considerable scepticism, but a week later came the report that the "draught" was again felt in the right breast. After a fortnight the supplementary feeding was discontinued and the rate of gain in weight proceeded satisfactorily until the child was five and a half months old. (Chart 3.) At this point lactation showed signs of failing. The rate of gain ceased and a loss of weight occurred. The

[2] Common Disorders of Children, 1910, p. 21.

breast-feeds gave less satisfaction, and the infant awoke in the night and demanded a meal when previously he had slept peacefully. The mother complaining of headaches, neuralgia, and indigestion, declared the tax of suckling was beyond her powers. After some discussion she now agreed to take the advice given at the first visit

CHART 3.



Case 3.—Weight curve of child. Lines as before. The arrow indicates the extraction of six maternal teeth.

and had six badly diseased teeth extracted. Her health improved conspicuously, and her regrets at having delayed treatment were as sincere as her previous assertion that she was perfectly well. The child continued to thrive, obtained from the breast all the milk he required and was weaned at the age of 14 months. He could walk without support before he was 10 months old, an achievement which had not been reached by any of the other six before the age of 16 months.

In the above example the need for artificial feeding was first threatened as the result of mismanagement when the child was about four months old; it appeared to be again called for at the seventh month on account of the woman's ill-health. The part played by the first factor in the previous failures of lactation was presumably the same. It is not possible to say anything about the effect of oral sepsis on the mother's health; it appeared to be of long standing.

The cases selected as illustrations have been chosen from nearly 200 in which the presence of dental sepsis interfered with the power of nursing an infant. Improvement capable of registration was achieved in 80 per cent.; in the remainder opportunities for recording its effects did not occur—some were lost sight of, and some did not complete the treatment. To the suggestion that herein lies the cause of many instances of the failure of lactation there are drawbacks, not the least being the heavy burden of responsibility which this disease has been asked to carry. Considerable disagreement is apt to occur in discussions which attempt to fix the point at which disease of the teeth is related to disorders in other parts of the body. Yet there seems no way to avoid the conclusion that to its other disadvantages must be added that of playing a very disastrous part in vitiating the course of breast-feeding.

The somewhat elaborate description of the cases will, it is hoped, be excused in view of the difficulty of isolating the essential points of the subject. It follows from what has been said that the earlier treatment is obtained the better. It is difficult to suppose that a condition which can influence a child so profoundly through its parent after birth, can fail to exert effects during intra-uterine life. Research into the association between dental disease and the occurrence of miscarriage and the birth of premature children of weakly physique might well produce important results. It might be hazarded that the appointment of a dental surgeon to the staff of every maternity hospital would greatly increase the utility of these institutions.

The opportunity to present the subject in its present form was intimately dependent on the diagnostic and operative skill of the dentist. Mr. H. C. Highton has devoted his time in the most ungrudging manner to this investigation, and the results quoted bear their own testimony to both his judgment and ability.

Gray's Inn, W.C.

MASSAGE AND MEDICAL ELECTRICITY IN THE AFTER-TREATMENT OF CONVALESCENT SOLDIERS.

ACCOUNT OF THE MECHANO- AND ELECTRO-THERAPEUTICAL DEPARTMENTS AT THE COMMAND DEPÔTS AND CONVALESCENT CAMPS.

BY FLORENCE BARRIE LAMBERT, M.B., B.S. DURH., D.P.H.,

INSPECTING OFFICER OF MASSAGE AND ELECTRICAL DEPARTMENTS ATTACHED TO COMMAND DEPÔTS AND CONVALESCENT CAMPS.

WHEN the medical history of the war comes to be written the Director-General's scheme for the establishment of Convalescent Camps, where the work of the general military hospitals can be completed and large numbers of men restored to the fighting service, will be ranked at its full value. That it has not received its full recognition up to the present is due to the quiet and gradual way in which the whole scheme of after-treatment has been set on foot. The public might be led to suppose from the articles which have lately appeared in the lay press that we in this country have very little in the shape of an organised scheme for the after-treatment of our convalescent soldiers, and even in quarters which might be expected to have the fullest information there seems to be a disposition to magnify French achievements rather at the expense of our own. Thus in the report of the Special Committee of the Balneological Section of the Royal Society of Medicine appointed to consider the treatment of disabled soldiers by physical remedies there appears the following statement:—

> Up to the present time physical remedies have not been used with the same thoroughness and precision as in France. In England heat, moist and dry, massage, and electricity are, of course, used throughout the country, and in a few cases baths and mechanical movements are being added. What is wanted is a combination and association of these powerful agencies under skilled direction. We think that a clear case has been made for the introduction of physical treatment upon an adequate scale into this country for the benefit of disabled and discharged soldiers. It is true that the *eau courante* bath of the French or the analogous whirlpool bath used in England has been adopted in some British hospitals. This, however, is but a single item in the treatment to which we refer, although its adoption may be regarded as a tacit admission of the good results that are being obtained by our French and Belgian allies.

Such a statement is misleading in that it passes over as practically non-existent the splendid work of the Command Depôts and Convalescent Camps, chiefly because the *eau courante* bath has not been installed broadcast. After all, this mode of application is still in its infancy, and while one is always anxious to test any new and improved methods of treatment, it will be very interesting, to say the least, to have the views of the medical profession two years hence on the efficacy of the *eau courante*, now very much on its trial, when compared with ionisation, radiant heat, diathermy, and massage in the treatment of ankylosis and similar conditions. It is noteworthy, however, in this connexion, that in recent statistics published by the War Office of men returned fit to their units from the Command Depôts, Randalstown heads the list. Owing to the very imperfect water-supply it has been found impracticable to install any form of hydrotherapy at Randalstown, and, therefore, only these latter time-honoured methods of treatment have been available.

The physical and electrical treatment of convalescent soldiers is by no means so lacking in coördination and skilled direction as certain criticisms might lead one to infer. It is necessary to be actually at work in the camps in order to appreciate how thoroughgoing a system it is which is being set up; but even a casual visitor would find it a revelation were he to go to any of the camps (say the one at Epsom, which is the most accessible from London) and watch the work carried on any morning or afternoon inside the massage and electrical department.

The Convalescent Hospital Camps.

Before the first six months of the war were over it became apparent to the Director-General that a great number of men were being discharged from military and Red Cross hospitals who, on account of stiff joints or injured nerves, were unable to return to duty, although they no longer required hospital treatment. These men were at first given extended leave at home, and were dealt with in out-patient departments

attached to the civil hospitals and in various special centres of treatment. Mr. and Mrs. Almeric Paget's massage and electrical centre at Portland-place, which I organised with the help of the Hon. Essex French, can, I think, claim to be the parent of the mechano-therapeutic departments subsequently attached to the Convalescent Camps, for it was after inspecting this centre that the Director-General asked that similar departments should be organised in connexion with the camps. The circumstances under which many of the men were living, however, militated against their recovery, and then it was that the Director-General instituted, at Eastbourne, the first of the great medical Convalescent Hospitals or Camps.

The idea governing this scheme was that men discharged from hospitals and convalescent homes should receive a final six weeks' treatment before being returned to their unit. Unfortunately, the first batches of patients were largely unsuitable, many of the men suffering from injuries so severe as to incapacitate them from all further service, while in other cases a year or more would have been required to effect a cure. The result was that a great many patients had to be returned to the hospitals. Eventually, however, the work at the camp settled down to the normal level, and the cases dealt with were of the kind for which the scheme was intended—namely, cases of stiff joints, slight nerve injuries, trench feet, fibrositis, &c.

A large mechano-therapeutic department was established in the camp to which I was appointed medical officer in charge. The electrical installation comprised 14 wall switchboards, worked from 50 accumulators, each of two volts, and furnishing galvanic, faradic, and combined currents as required. There was also a plentiful supply of local radiant heat, and Schnee four-cell baths, and vibrators worked from the main. As a great number of assistants were necessary whom it would be difficult to supervise in detail, it was thought well to keep the apparatus as simple as possible. Subsequent experience of many departments attached to Convalescent Hospitals and Command Depôts has strengthened my opinion that, where a large staff is necessary, the simpler the apparatus the better the result.

At the outset we were faced with the problem that although a fair number of masseuses and remedial gymnasts were available, the supply of electricians was very limited, and there were no reserves to draw upon. We got over the difficulty as well as possible by splitting up the staff of 25 masseuses into squads of 5, placing in charge of each squad a masseuse who was known to be a skilled electrician, and making her responsible for the work and tuition of those under her. The plan proved very satisfactory, and was afterwards adopted in the camps at Epsom and Dartford, with the result that when, some six months later, the Command Depôts were started we had a nucleus of experienced and practical electricians to draw upon. At present most masseuses, before starting work, take a course in electricity, and thus come with the advantage of some practical experience in the working of the delicate apparatus entrusted to them.

The standard for masseuses employed in military work is that they shall have had not less than six months' training, and shall either hold the certificate of the Incorporated Society of Trained Masseuses or satisfy a board of examiners set up by the War Office. The great bulk of the military workers—90 per cent. is probably an under-estimate—hold the certificate of the society. We have the safeguard, therefore, that our workers are trained women. The training may not in all cases have been as complete as we could wish, but when comparisons are made with the conditions on the other side of the Channel, it is well to remember that the length of training in this country is in very favourable contrast to that which is considered sufficient in France.

The camp at Eastbourne is a large one, with 3000 patients, and the visits to the electrical department each day vary between 600 and 800. By dovetailing the radiant heat and electrical applications and the massage, it is found possible for each masseuse to treat from 20 to 22 cases a day, each case receiving from 20 to 30 minutes' treatment, and in some cases longer. In July of last year I was appointed medical officer to similar Convalescent Camps which were established at Dartford and Epsom. The Dartford camp is comparatively small, with only 1200 patients, and never more than from 150 to 200 daily treatments in the department; at Epsom the camp is very large, with 4000 patients and between 500 and 700 men treated daily. Both camps have been fitted with apparatus similar to that installed at Eastbourne. There are now five Convalescent Camps in all, the two latest being in the North of England, and although statistics can only convey a skeleton-like notion of such work as this, some figures may be of interest:—

	A.	B.	C.	D.	E.
Eastbourne ...	2,880	26,760	2,696	772	29
Epsom	4,000	29,642	3,050	730	25
Dartford	1,200	9,502	957	207	11
Blackpool	2,113	4,319	2,030	525	20
Alnwick	2,080	7,536	1,878	512	20

A. Total capacity of camp. B. Total number of men passed through the depôt. C. Number of men in camp on Sept. 20th. D. Number of men undergoing massage, electricity, and special exercise treatment on Sept. 20th. E. Number of masseuses.

The Command Depôts.

Even the Convalescent Camps proved not to be the last word in this system of after-treatment. It was found that after six weeks or so in such a camp there was a residue of men who, although quite capable of being cured, would require a much longer period—anything from four to six months. To provide for these cases the Command Depôts came into being. These are camps in which convalescent soldiers belonging to particular commands are grouped, and their administration resembles rather that of a military barracks than that of a hospital. The men are in khaki, and are subject to more fatigues and drills. The military commandant is at the head of the camp, the medical officer being the senior medical officer.

To some extent the Command Depôts have become places for separating out the unfit, for the cases treated are necessarily of a very chronic type. There are periodical inspections by medical boards, when men incapable of further military service are discharged and pensioned. All cases in which there appears to be no improvement and in which surgical interference may be desirable are periodically paraded and examined by the Inspector of Orthopædics or his representative.

Some idea of the life of a patient in a Command Depôt may be given in order to illustrate what a finely coördinated scheme it is which has been put in practice. Usually the patient arrives at the depôt in the evening and goes straight to the Welcome Hut, run by ladies of the district, where he gets a good meal. He then goes to his company, and is told to report to the senior medical officer next morning He is duly seen by his company's medical officer, and all details of his history and condition are set out on a card, after which he is grouped for treatment. This grouping and the scheme of treatment generally varies to some extent in each depôt according to the ideas of the senior medical officer in charge. A representative instance may be taken in the six groups into which the men are divided at Seaford:—

Group I.—Men practically fit, but requiring a final hardening process. Subjected to drill, route-marching, fatigues, and gardening.

Group II.—Men receive physical drill under Aldershot drill-sergeants and staff, and have short route-marching, light fatigues, and general sports.

Group III.—Men have walks, physical training, light fatigues, and lectures on personal hygiene and other topics of interest.

Group IV.—Mostly medical cases, such as nephritis and heart affection, and convalescence after abdominal operations, pleurisy, &c. Subjected to walks, light physical training, gardening, and lectures.

Group V.—This group comprises the larger proportion of the massage cases, such as stiff joints, trench feet, nerve injuries, and sciatica.

Group VI.—Cases of shell-shock or cases so shattered as to be unfit for any form of exercise other than gardening, and walks, and certain special movements to improve co-ordination.

The men are kept under strict observation and continual medical inspection, and are passed up or down the scale according to their physical ability. The senior medical officer personally sees every man before he is transferred to a different group after the preliminary selection by the medical officer.

When a patient is sent to the massage department a fresh card is made out on which all particulars are entered and the required treatment also set down. Here he receives the exercises and movements and electrical and heat applications which are suitable to his case. If it is thought necessary, he is also given remedial gymnastics, or, as it

is sometimes called, re-education of movement. This department is in the hands of remedial gymnasts who have received two years' training. I give below a table of the remedial gymnastics ordered for the convalescents at the Heaton Park Depôt, where Major Tait McKenzie, who is professor of physical education at Philadelphia University, sets great store upon physical exercises.

No. 2. *Remedial Exercises: Single Shoulder (Tait McKenzie).*

a. Movement with resistance.—(1) Arm raise sideward with resistance; (2) arm lower sideward with resistance; (3) arm raise forward with resistance; (4) arm raise backward with resistance; (5) arm circumduct with resistance.

b. Pulley weight.—(1) Position: Side to, arm sideward raised. Movement: Arm forward across chest, elbow straight. (2) Position: Side to, arm sideward raised. Movement: Arm upward raise, elbow straight. (3) Position: Side to, arm sideward raised. Movement: Arm downward and forward, arm downward and backward alternating. (4) Position: Side from, arm across chest. Movement: Arm sideward, elbow straight. (5) Position: Side from, arm downward and behind. Movement: Arm side upward raise (floor attachment).

c. Shoulder machine.—Stretching contractures up to point of pain (if pain persists discontinue and report).

The depôts bear a general resemblance to each other, but, naturally, both the equipment and the methods vary according to the individual views of the senior medical officer. At Ripon, for example, the Bergonié current—i.e., a rhythmically interrupted and reversed faradic current—and leucodescent lamps are used in preference to radiant heat or ordinary faradism; at Blackpool high frequency is largely employed; and at Tipperary a scheme for teaching men trades is being developed—a kind of educative convalescence.

The average length of time a man remains in each depôt is from 2½ to 3 months. After being hardened in Group I. he is then, if fit, transferred to Army category A, B, or C. There are various subsections in each category, but, generally speaking, the men in A undergo full military training and are returned to their units in 10 or 14 days ready for transport overseas with the next draft. In category B the men, although physically sound, are withheld from general service by reason of some disability, such as old fractures, "football knees," amputated fingers, and the like, and such men are passed for garrison duty. In category C the men are considered only fit for duty at home and for sedentary occupations. The extent of the work carried out in the Command Depôts may again be put to the test of figures:—

	A.	B.	C.	D.	E.
Heaton Park ...	4,000	8,020	3,356	477	31
Kinmel Park, Rhyl	4,000	6,500	3,000	270	12
Shoreham	4,400	9,539	3,243	411	13
Seaford	3,887	7,002	3,713	1,024	40
Sutton Coldfield ...	2,300	5,687	2,376	791	24
Ripon	4,080	5,587	1,319	806	15
Ireland:					
Ballyvonare ...	3,500	3,110	1,962	374	18
Randalstown ...	4,000	2,616	2,441	586	20
Tipperary	4,000	1,312	1,848	777	26
Total Number of Men Undergoing the Special Treatment in the Convalescent Camps and Command Depôts.	46,440	127,132	33,869	8,262	304

A. Total capacity of camps. B. Total number of men passed through the depôts. C. Number of men in camp on Sept. 20th. D. Number of men undergoing massage, electricity, and special exercise treatment on Sept. 20th. E. Number of masseuses.

French and British Methods of Mechano-therapy.

In conclusion, a few words may be said with regard to the salient points of difference between French methods and our own as they suggested themselves to me during a recent visit to Paris.

(*a*) The first point to note is that in France the men are more often treated as out-patients, whereas our men are treated in camp, and are, therefore, subject to a more continuous routine both of treatment and discipline.

(*b*) In an examination the French lay more stress than we do on electro-diagnosis; each man is also measured more fully than is usual in our camps.

(*c*) In actual massage the French work is not to be compared with our own. As I have already pointed out, no one in this country is employed in military work with less than six months' training, while in many cases the training has been prolonged for a year or two years. In France, on the other hand, there is no trained body of masseurs or masseuses comparable to the Incorporated Society of Masseuses. In July of last year the French military authorities were compelled to start a training school for massage at the Grand Palais, in Paris, where there is also a large *hôpital complémentaire* for cases that require physical remedies, but the training is inadequate—at least, according to our standards. The tuition lasts for one and a half hours every day for a month, half of this daily lesson being devoted to anatomy and the other half to massage.

(*d*) As regards medical gymnastics and the so-called re-educative movements, the French rely mostly on the Zander apparatus, which has never been popular in England. Its vogue in France is not due to any conviction as to its soundness, but simply to the fact that there is no trained body of medical gymnasts to do the work. Our corresponding treatment is mostly in the hands of medical gymnasts who have either taken the extra six months' course in medical gymnastics in addition to the massage course or hold the two years' certificate of one of the physical training colleges. There are few who will not agree that passive mechanical exercises can never give the same results as good manual work.

On the whole, although British mechanotherapy has still many things to learn, the reproach of lagging behind our Continental Allies cannot justly be urged either with regard to our physical methods in particular or our system of after-treatment in general.

ULTRA-VIOLET RADIATION FROM THE TUNGSTEN ARC.[1]

By W. J. TURRELL, M.A., M.D.OXON.,
ELECTRO-THERAPEUTIC PHYSICIAN TO RADCLIFFE INFIRMARY, OXFORD.

AT a meeting of the Section of Electro-Therapeutics of the Royal Society of Medicine in January last Dr. E. P. Cumberbatch and Dr. A. Macgregor read notes on several cases treated by the so-called Simpson light. Most of these cases were either cured or showed marked improvement. Dr. J. H. Sequiera at the same meeting clearly demonstrated the non-penetrating character of this radiation and its identity with the already known method of treatment by ultra-violet radiation. Dr. Sidney Russ also showed that, tested by the spectroscope, the radiation from the Simpson or wolframite electrodes was practically identical with that from metallic tungsten. It was, I think, perfectly obvious from the papers and discussion that evening, if tungsten was readily obtainable and burnt satisfactorily in an arc consuming a small amount of current, that the metallic electrodes would prove a far more satisfactory source of ultra-violet radiation than electrodes made from the impure ore. I endeavoured without success for some months to obtain a supply of tungsten from the makers of electrical apparatus and from other sources. I was told on every hand that tungsten had always been very difficult to obtain, and that since the war it had become practically unobtainable. Discouraged by this failure, I had at last to have recourse to the Simpson electrodes both in my private and in my hospital work. These electrodes I found burnt badly, always with much spluttering, and frequently requiring grinding before they would burn at all. They were, moreover, very expensive, as they cost £2 the pair and were very quickly consumed. Subsequently, as a great favour, I obtained two short rods of tungsten each about 1½ inches in length. These I found burnt very steadily, produced what I may call the erythema dose in a comparatively short time, and were very slowly consumed. Patients whom I had already treated by radiation from the Simpson electrodes, and whom I subsequently treated by the tungsten radiation, all expressed themselves as having been more benefited by the radiation from the metal. This increased benefit was, I think, due to the greater intensity of the radiation from the metal, and the greater accuracy with which the dose could be administered owing to the more steady flame.

A short time ago I had the good fortune to be placed in communication with the British Thomson Houston Company of Rugby, and they very courteously supplied me

[1] A paper read before the Section of Electro-Therapeutics of the Royal Society of Medicine on Oct. 20th, 1916.

with a number of tungsten rods of different sizes. They assure me that there will not be the slightest difficulty in supplying any quantity of these rods that is likely to be required for medical purposes. The price will be only a few shillings for a pair of electrodes. This will compare favourably with that charged for the Simpson electrodes, especially when it is borne in mind that the metallic electrodes last about ten times as long. The Simpson lamp, costing £25 to £30, sold for the wolframite electrodes, struck me from the first as a needlessly costly and bulky piece of apparatus, for there seemed to be no reason why a simple arc lamp with sufficient insulation to take a current of 15 ampères should not answer every purpose required. After some search I bought a No. 9 empire arc lamp for £3 3*s*. from Messrs. Butcher and Sons, of Camera House, Farringdon-avenue. This proved such a satisfactory lamp for the purpose that I have bought a similar one for the hospital.

At my house I work my lamp off my X ray resistance, clamping the lamp to the tube stand so that it can be readily raised or lowered. If one has not a suitable resistance this piece of apparatus will cost an additional £4 9*s*. 6*d*. The price of this lamp has recently been raised 12*s*. In my hospital work I have been using an ampèrage of 9 to 11; in my private practice I use about 7 ampères. With the present pressure in hospital work it is necessary to make the exposures as short as possible. Moreover, the heavier currents seem indicated by the researches of Cernovodaeno and Henri, who found that a 24-hour culture of colon bacilli was completely sterilised in one second at a distance of 20 cm. with a current of 4·7 ampères at a voltage 140, whilst with 2·3 ampères at 23 volts an exposure of 300 seconds was necessary to sterilise the culture.

The therapeutic value of ultra-violet radiation appears to be due to its destructive action on micro-organisms and to the active hyperæmia which it induces in the superficial tissues. The latter is probably of the greater clinical value, and within certain limits the intensity of the erythema produced in the skin in a given time may be taken as a measure of the clinical efficiency of the radiation from the different arcs. In conjunction with Mr. C. A. Schunk, of Ewelme, near Oxford, I recently made a few simple experiments on this erythema dose. Different areas of the skin of the forearm were in turn exposed to the action of the following electrodes: Simpson electrodes, metallic tungsten, cored carbons containing uranium oxide, Ur. 308, with others containing the powders of tungsten, wolframite, and iron. The exposure was for five minutes at a distance of 12 inches with a current of 5 ampères. The most intense erythema was obtained from the metallic tungsten; the next in intensity was that from the Simpson electrodes. None of the other electrodes produced any erythema in the five-minute exposure.

At Oxford we use the two methods of treatment by the ultra-violet radiation—that is, by the use of a reflector and by the use of a quartz condensing lens. In using the reflector method the structure of the mirror is of considerable importance when dealing with wave-lengths of the ultra-violet region. Silicon, which reflects 75 per cent. of the ultra-violet rays, is the most efficient. Nickel reflects 40 per cent., copper 35 per cent., and silver only 6 per cent.[2] In this method of treatment the patient is placed about 12 inches from the arc and the reflector confines the radiation as nearly as possible to the treated area. We usually adopt the focussing method; in this the quartz lens is held in a wooden shield and the rays are focussed on the area to be treated. In the treatment of granulating wounds special attention is directed to the stimulation of the granulating edges. The shield holding the lens should be sufficiently large to protect untreated areas from the action of the light.

In administering tungsten radiation special attention should be paid to the protection of the eyes of the patient and operator. Hooded frames containing No. 2 Crookes' glass should be worn. I am showing a pair of such glasses made by the Oxford Optical Company. I think also, if much treatment is done, a mask or veil should be worn by the operator, or it might possibly be more convenient to fit a shield to the lamp to cut off the extraneous rays.

In addition to the large lamp, which, of course, requires heavy wiring, I am showing a small lamp, which only takes 4½ ampères and can therefore be used from the ordinary lighting circuit. Smaller electrodes are used in this lamp; a finer point of light is obtained which is very convenient for the focussing method. A suitable lamp for this purpose can be purchased for about £2, including the necessary resistance. In the selection of cases for ultra-violet radiation it is important to bear in mind the superficial action of this treatment. Indolent and extensive sloughing wounds have been much benefited, but the results obtained have been much better where one or two preliminary treatments by zinc or chlorine ionisation have been administered. In barbers' itch and pustular eczemas the treatment has been very useful, but here again preliminary zinc ionisation conduces to a speedy cure. Certain cases of ulcerating lupus have improved. The nodular type with little or no ulceration has not been benefited unless previously fulgurated. Cases of eczema of the face and arms have done very well, some of them very old-standing cases. Eczema of the hands, where, of course, the skin is thicker, has not done so well. A case of lupus erythematosus shows at any rate temporary improvement. The treatment of rodent ulcer by ultra-violet light, unless the case has been freely fulgurated, has not been successful in my hands; the treatment by radiotherapy of these cases is far more satisfactory. The erythema set up by the radiation is sometimes useful in allaying the pain of neuritis.

It has been suggested that ultra-violet radiation might be more conveniently and more efficiently administered by means of a tungsten filament in a quartz globe. The B.T.H. Company constructed for me a 1000-watt 100-volt tungsten filament lamp of 2000 c.p. Mr. Schunk, on examining this lamp with the spectroscope, found that its spectrum stopped at 3700, and was therefore useless for ultra-violet radiation. This result was, of course, to be expected, for when a solid body is heated to incandescence, the wave-lengths stop at about 3500, and a continuous spectrum is obtained. This spectrum is the same with different solids, and does not extend far into the ultra-violet region. On the other hand, in using metals in an electric arc, the metal is heated to volatilisation, and the specific radiation and spectrum of the metal used is obtained. With a mercury vapour arc as in the Kronmeyer lamp there are a few very intense lines in the ultra-violet region, but with the tungsten arc there is almost a continuous spectrum in that region.

The therapeutic value of ultra-violet radiation has been established for some years. The electric arc is the simplest and most convenient means for its production. The amount of ultra-violet radiation obtainable from any metallic electrode appears to be directly proportionate to the melting-point of the metal. Tungsten has the highest melting-point of any metal obtainable, therefore tungsten arc electrodes would appear to be the most efficient source of ultra violet radiation at present available. I should like, in conclusion, to express my indebtedness to Mr. Schunk for much valuable information in regard to the physical properties of ultra-violet radiation. Since writing this paper I have received the following letter from Mr Schunk, from which it will be seen that the conclusions he arrives at are in accordance with those stated above. He says:

"The following are the tentative results I have arrived at, and of which, if of interest, please avail yourself on Friday:—1. The tungsten arc is the most intense source of ultra-violet light so far experimented with, the lines being so numerous and close together that they constitute almost a continuous spectrum. 2. The Simpson electrodes give the tungsten spectrum with the addition of the iron lines, but on the photographic plate with the same exposure and ampèrage are not so intense, no doubt this is due to the unsteadiness of the arc compared to that from the tungsten rods. 3. Half-inch cored carbon electrodes filled with wolfram (75 per cent. tungsten and 25 per cent. iron) burn very steadily and give an identical spectrum as the Simpson electrodes, but the intensity as recorded on the photographic plate is not quite so intense. 4. The iron arc is very rich in lines in the ultra-violet region, but compared to tungsten fails at about wave-length 2500, whereas tungsten extends to wave-length 2160 without much diminution. 5. From the spectroscopic point of view, giving the Simpson electrodes and the carbons cored with wolfram an increased exposure compared with the tungsten arc, one would expect to get the same result from the ultra-violet light treatment point of view.

Hyperæmia experiments.—Using the tungsten arc and a quartz cylindrical condenser, forming an image 18 inches from the condenser, about ½ inch wide, in the form of a strip or

[2] The Reflecting Power of Metals in the Ultra-violet Region of the Spectrum, Astrophysical Journal, p. 205, vol. xlii., 1915.

the skin: 1. A piece of ordinary thin photographic glass. No reaction in 2½ minutes. Spectroscopic examination 3000 wave-length recorded. 2. A piece of microscopic cover-glass. An appreciable reaction in 2½ minutes. Spectroscopic examination 2700 recorded. These tentative experiments tend to show that radiations of 3000 Angström units and upwards have no effect as judged by the hyperæmic effect, whereas from 2700 to 3000 wave-length there is an effect."

Oxford.

Clinical Notes:

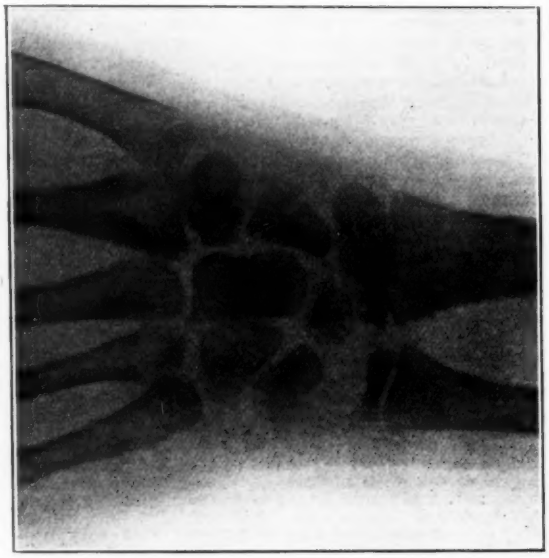
MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF FRACTURED SCAPHOID AND OS MAGNUM IN A BOY 10 YEARS OLD.

BY CLAUDE GOULDESBROUGH, M.B., B.CH. OXON., M.R.C.S., L.R.C.P. LOND.,

ASSISTANT SUPERINTENDENT, X RAY DEPARTMENT, AND MILITARY RADIOGRAPHER, ST. THOMAS'S HOSPITAL, S.E.; AND LATE CONSULTING RADIOGRAPHER, BRITISH EXPEDITIONARY FORCE.

THE excuse offered for publishing this case lies in its rarity. Fracture of one or more of the carpal bones in an adult is comparatively common, especially the scaphoid, although injury to the unciform and pisiform is very rarely seen. It is a different matter, however, in the case of children; in their case the part which suffers in most wrist injuries is the epiphysis of the lower end of the radius, which is displaced forwards or backwards, taking with it a chip of bone of the adjacent diaphysis. Fracture of carpal bones in children must be very rare—the records of



St. Thomas's Hospital fail to show, as far as can be seen, any case of this type of injury. It is therefore very interesting to come across a juvenile wrist showing fracture of two of the small bones, but there is also another interest attached to this case to which reference will be made later, and that is the subject of repair. The history of the case is as follows:—

The patient, a boy of 10—a case under the care of Dr. Edward Hedley—was sent to me because of an accident a fortnight old which occurred when he was endeavouring to land a small rowing-boat. His hand was crushed apparently between the prow of the boat and the stone wall of the harbour. The injury was pretty severe, and apart from some swelling at the time he sustained loss of function in his hand in a way that suggested some damage to the median nerve. When I saw him a fortnight after the accident he was still unable to "make a fist," but two days later, according to Mr. C. A. R. Nitch, who was called in to give him surgical treatment, this power had returned. I noticed at the time that the patient had pain on pressure directly over the scaphoid, but dismissed the idea of fracture of that bone from my mind as being hardly possible. The appearance of the fracture suggests, I think, a direct injury, and the history rather supports the view that the damage was caused by the sharp edge of metal on the prow of the boat striking the hand in an oblique direction corresponding roughly with the line of fracture of the two bones.

It will be interesting to follow the future of this case from the point of view of union. It is a well-known fact that in *adults* very rarely, if ever, does a fractured carpal bone unite, at any rate by bony union. From X ray appearances it is impossible to distinguish an old from a recent injury—both presenting exactly the same appearance. In the case of this patient I understand that at present no operative measures are intended, the surgical treatment being limited to extreme hyper-extension at the wrist-joint with immobilisation in this position in order to give the best possible chance for union to take place. Skiagrams taken at intervals—considerable intervals—ought therefore to shed some light as to whether the prognosis in cases like this is as bad as it is in cases of adults.

Welbeck-street, W.

PREGNANCY COMPLICATED BY INCREASED CEREBRO-SPINAL PRESSURE; SURVIVAL OF MOTHER AND CHILD.

BY NORMAN GRAY, M.A., M.B., B.C. CANTAB.

THE following case appears to me to be of some interest to general practitioners, and as, to my knowledge, no similar case has been recorded during recent years I propose to give a short account of it and of the treatment adopted.

On June 9th, 1916, I was sent for to see a multipara, aged 38, whom I found complaining of very severe headache, sickness, and feverishness. She said she had not been feeling well for some weeks, but had kept about her work until that day.

On examination I found that the patient was about seven and a half months pregnant, the fœtal heart being quite audible. The symptoms were very indefinite at that time and the woman appeared to be suffering from some acute gastric disturbance. During the next few days, however, the pain in the head and the vomiting increased, while there slowly developed marked rigidity of the neck and back, with retraction of the head. The tongue was now thickly coated and the bowels were obstinate. The pupils were equal and reacted normally. The abdominal reflex was greatly increased, as were also the knee-jerks. The plantar response was doubtful in both feet; ankle clonus was once obtained with the right leg, but not with the left. The urine was examined and found to be normal in every respect, and this was always the case in repeated subsequent examinations. The temperature varied between 100° F. in the morning and 103° in the evening, while the pulse was usually about 80. The vomiting was by this time very frequent and severe, and the patient was quite unable to obtain any sleep. After four sleepless nights, during which time various hypnotics were tried, I gave her a hypodermic injection of heroin gr. 1/6 and hyoscine hydrobrom. gr. 1/100. This appeared to have a most beneficial effect, and the patient slept for five hours. This injection was repeated on several occasions, and although the amount of sleep obtained was never as great as after the first dose, yet each injection was followed by a certain period of sleep.

On the ninth day I performed lumbar puncture under a general anæsthetic, and found the cerebro-spinal fluid to be under great pressure. Slightly over three ounces of clear fluid ran away and this was found on bacteriological examination to be sterile. On recovering from the anæsthetic the patient was rather collapsed. Her temperature fell to below 95° where it remained for two days, and then it slowly rose to normal, never again going above 99°. The pulse-rate was not much altered, and it remained at about 80. There was an immediate improvement in the retraction of the head, which became less marked each day. There was a little vomiting after the anæsthetic, but this had ceased within 12 hours. The patient was still troubled with sleeplessness, but with the aid of chloral hydrate, gr. xx., this difficulty was overcome.

On the fourteenth day, five days after the lumbar puncture, the patient went into labour, and was rapidly delivered of a rather small but healthy male child. The puerperium was normal in every respect, and the child, after wasting a little for the first week, soon began to put on

weight. It is now four months since the child was born, and the mother, who is about the house again, only complains of rather frequent headaches.

It would have been most interesting to know the cause of this great increase in the cerebro-spinal pressure. Unfortunately there was some delay between the lumbar puncture and the examination of the fluid. This may account for the fact that the fluid was sterile. Several somewhat similar cases have occurred lately among soldiers in which the influenza bacillus has been found in the cerebro-spinal fluid, and it seems to me that this was most probably the organism in this case.

The most interesting points in the case appear to me to be: (1) The great improvement following lumbar puncture; (2) the beneficial effect of heroin and hyoscine in producing sleep; and (3) the healthy state of the child at birth and up to the present time.

Newmarket.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

Orthopædic Principles and Methods in Military Surgery.

A MEETING of this society was held on Oct. 23rd, Lieutenant-Colonel D'ARCY POWER, the President, being in the chair.

Mr. DAVID MCCRAE AITKEN gave a demonstration of cases illustrating Orthopædic Principles and Methods in Military Surgery.[1] The demonstration consisted of a series of cases illustrated by lantern slides showing the X ray appearances, the deformities, the method of treatment adopted, and the results of the treatment. In many instances the lantern slides were supplemented by plaster casts, paintings, and the patients themselves in their present stage of treatment. The arrangement of cases was intended to point out that restoration of function can be secured in many cases by perseverance in gentle means when no such success could be obtained by any rapid measures. The first series of cases consisted of patients who had lost the head and neck of the humerus, and in some cases also the glenoid surface of the scapula. The method of treatment shown was continuous abduction of the arm in an abduction splint to allow adaptation of muscles and ligaments and the formation of an efficient false joint. The second series consisted of compound injuries to the elbow-joint demonstrating that persistent maintenance of the elbow in a flexed position gives the best opportunity for the restoration of a certain measure of movement, while any attempt at forcible movement would inevitably lead to further injury of what remained of joint surfaces and would induce a firm ankylosis. The third series illustrated points essential to, and faults which may occur in, bone-grafting operations to replace defects in the bones of the forearm. The wrist-joint was next dealt with and cases were shown which demonstrated the importance of dorsiflexion of the wrist at all costs, and the rapid recovery of movement in the fingers 10 days and three weeks respectively after wrenching into dorsiflexion with Thomas's wrench, followed by immobilisation of the wrist in plaster. The cases of injury of the lower limb illustrated the correction of errors of alignment in fractures of the long bones, including the correction of a case of traumatic coxa vara with a shortening of 3 inches which had been reduced to about 1 inch. The patient had also total paralysis of the sciatic nerve, which had been destroyed by the original gunshot wound. This was followed by a complete demonstration of the various stages of correction of a mal-united fracture of the middle of the shaft of the femur with shortening of over 2 inches, the result to day being a shortening of less than half an inch in a period of seven and a half weeks. The patient was at present walking in a Thomas walking calliper. Splints suitable for the gradual extension of flexed knees and the gradual flexion of knees stiff in extension were next shown. These were followed by a series of mal-united fractures of the leg and deformities of the foot which had been corrected by various methods. The speaker's experiences of the correction of deformities and restoration of function in cases of trench-foot were then related. The mode of attack was, first, rest in bed and gradual correction with splints during the stages of extreme tenderness, massage to relieve pain being employed at the same time; secondly, more firm correction by moulding in plaster; and thirdly, a prolonged period of walking with the foot corrected in plaster. Throughout the whole demonstration the importance of maintaining muscular tone by means of massage, and especially by means of voluntary movement with the splints continuously worn, was given due attention.

Dr. J. B. MENNELL referred to conditions of fixation of joints in which movements and exercises led to no improvement, but great advantage followed rest in suitable positions. He spoke of the importance of keeping in function those muscles and joints which were uninjured, having often encountered cases where inattention to this rule had caused more difficulty in regaining movement in the unaffected than in the affected region. It was advantageous, wherever possible, to attempt similar exercises synchronously on the two sides, for the muscles on the affected side would often begin involuntarily to imitate the movements of those on the sound one.

Dr. D. M. BARCROFT spoke of the good results which followed the application of the same rules as those demonstrated by Mr. Aitken in obtaining recovery in muscles paralysed after poliomyelitis.

Mr. R. H. JOCELYN SWAN agreed in the main with Mr. Aitken. He recommended excision in cases of recent serious destruction of a joint accompanied by suppuration. Like Mr. Aitken, he had experienced great difficulty in obtaining recovery of function in cases of hallux rigidus and hallux valgus.

[1] The paper will be published in full in THE LANCET.

Reviews and Notices of Books.

Arboreal Man.

By F. WOOD JONES, M.B., D.Sc. Lond., Professor of Anatomy in the University of London (London School of Medicine for Women). With 81 text figures. London: Edward Arnold. 1916. Pp. 230. Price 8*s.* 6*d.* net.

IT may be said at once that the Arris and Gale Lectures, delivered by Professor Wood Jones at the Royal College of Surgeons of England in 1915 and 1916, and which now appear in book form with the title given above, constitute an important and original contribution to our knowledge of the evolution of the human body. The author has succeeded in doing a thing which many scientific men regard as impossible—he has presented a technical problem in a form which is at once new and acceptable to experts and yet which can be understood by the novice with ease and interest.

In the opening chapters Professor Wood Jones attacks the prevalent conception—one which has become traditional—that man's body represents the supreme product of creation or evolution. He passes in review the various structural parts of man's limbs—the hand, the forearm with its adaptations for supination and pronation, the shoulder with its well-developed clavicle, the foot, leg and hip—and at every point he meets with structures which have no counterpart in any mammalian order except that to which man belongs—the Primates. To find those structural and functional characters which distinguish the human and simian limbs he finds it necessary to descend to the very lowest of land-living vertebrates—the "clambering water newt" and the slow-moving and primitive tortoise. We are justified, he holds, in considering that the limbs of such primitive forms must be accepted as representing for us the structural condition of the earliest mammalian limb—the pro-mammalian forms whose fossil remains are found in deposits of the Triassic epoch. He then proceeds to answer the question: How is it that the various elements of the ancestral or pro-mammalian limb have been preserved in human limbs? His answer is that the Primates must have broken away from the early land-living mammalian stock while the primitive bones and muscles were still preserved in that stock, and that the primitive elements proved useful and were preserved in that particular form which adopted an arboreal life and used the hand and foot as grasping organs. The primitive plan on

which the limbs of man are built can only be accounted for by supposing that man's ancestry spent a long pilgrimage on the trees. It was during his arboreal phase that the vast majority of those anatomical characters which we regard as adaptations to man's upright posture were evolved.

"The upright poise of man," writes the author, "has been lauded as one of his greatest distinctions. This praise of human uprightness has, without doubt, been carried to absurd extremes, so also has the tendency to ascribe to that same uprightness a multitude of human weaknesses and disabilities. This visceral uprightness is no new thing, the readjustment has been gradual, and some measure of it has been very long established. It is easy to overdo the praise of the poise. It is equally easy to overdo the condemnation of it as a cause of many human ills."

The recognition of very primitive structural characters in man's body is no new discovery; it is one which the late Professor Klaatch emphasised. What is new is the complete and systematic method by which Professor Wood Jones has attacked the problem and the manner in which he has brought to its solution an intimate and accurate knowledge of living moving things. For him the real solution of an anatomical problem of any part lies in a painstaking inquiry as to the action of that part in the living animal. In this respect his book stands alone amongst treatises of an anatomical nature. This attitude is particularly well exemplified in his treatment of certain relations to the reproductive system. The uterus of the higher Primates is peculiar in that its cornua are greatly reduced and its body greatly enlarged; as a rule only one offspring is produced at birth; the mammæ are reduced to two in number and are situated on the pectoral region; the young is nursed. At first sight these seem isolated facts, all of them inexplicable. To Professor Wood Jones all are the result of an arboreal environment. A single baby ape is as much as the mother can manage at once; with a single pregnancy the uterine cornua become unnecessary; two mammæ become sufficient. They are pectoral in position because the young cling to the breast and are nursed there. The mother can nurse the young because the hands are specialised for grasping and holding.

The section of this book which is most likely to appeal to the general reader is that which deals with the evolution of the human brain. The basis on which the author builds is that provided by the classical researches of Elliot Smith. Cerebral anatomy and comparative as well as human psychology are treated as interdependent matters, and the success of this part of "Arboreal Man" lies not only in the happy conjunction of aims and methods but in the many original observations which Professor Wood Jones brings to the elucidation of complex problems. It is a book which will produce discussion and lead to a further increase of knowledge.

A Text-book upon the Pathogenic Bacteria and Protozoa, for Students of Medicine and Physicians.

By JOSEPH MCFARLAND, M.D., Sc.D., Professor of Pathology and Bacteriology in the Medico-Chirurgical College, Philadelphia, &c. Eighth edition. London and Philadelphia: W. B. Saunders Co. 1915. Pp. 878. Price 18s. net.

WE have in past years commented favourably upon previous editions of this text-book and have no reason to alter our views in the presence of the volume before us. It gives a very complete account of the various infective organisms—animal, vegetable, and doubtful, for the position of the spiral organisms is not yet established—preceded by general considerations on immunity, technique, and classification. Vaccines and serum reactions are also dealt with in general and in particular. The arrangement of the chapters on individual parasites is, as was previously noted, somewhat arbitrary, the protozoa not being grouped together, but scattered among the bacterial parasites. The subject-matter in the present edition has been brought up to date, the size of the pages has been increased, and small type has been employed for technical details and matters of minor importance to the general reader. The book is fully illustrated and well indexed, and forms a very commendable manual of micro-parasitology

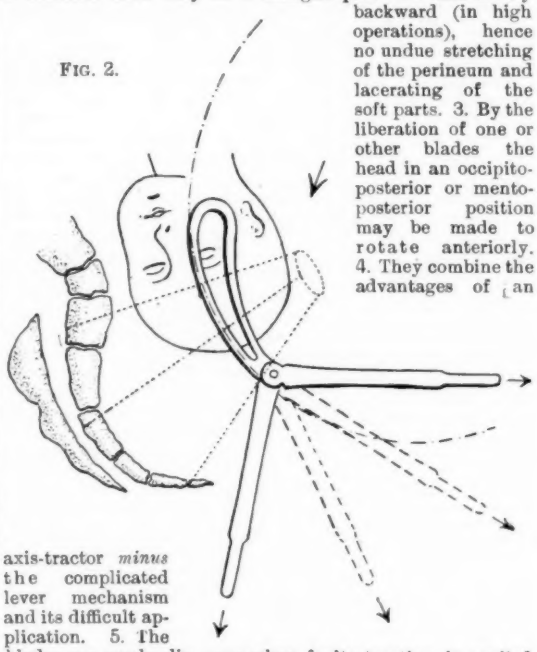
New Inventions.

IMPROVED OBSTETRIC FORCEPS.

THE obstetric forceps here illustrated incorporate some novel features. The cephalic portion of the blades (Fig. 1) are mobile—an arrangement that enables an automatic moulding and rotation of the head to take place without interfering antagonistically with the normal uterine contractions. The blades are so constructed that, by turning the bottom key upwards, one or both can be either fixed or liberated at the will of the operator. It is well known that in the high operation a rigid forceps when seizing an asynclitically placed head at the brim will tend to pull it down in this position at the expense of much unnecessary force and labour on the part of the obstetrician. Mobile blades in such cases will obviously favour a gradual correction which the uterine contractions (= *vis medicatrix uteri?*) are endeavouring to establish. To remedy this defect, Tarnier introduced his axis-tractor forceps. The freedom of the forceps to follow the movements of the head constitutes a great advantage of his instrument. The present forceps, with their mobile blades, will favour a natural rotation in practically any line of traction; the blades when free will automatically adapt themselves to the sacral curve. (Figs. 1 and 2.) By the fixation or liberation of one or other blades *plus* light traction an occipito-posterior or mento-posterior position may be made to rotate anteriorly. To sum up, the advantages are: 1. The movable blades allow the head to mould and adjust itself to the larger pelvic diameters of the parturient canal without the resistance of the ordinary fixed forceps. 2. Traction need only be a straight pull—not necessarily backward (in high operations), hence no undue stretching of the perineum and lacerating of the soft parts. 3. By the liberation of one or other blades the head in an occipito-posterior or mento-posterior position may be made to rotate anteriorly. 4. They combine the advantages of an axis-tractor *minus* the complicated lever mechanism and its difficult application. 5. The blades can rarely slip, even when faulty traction is applied.

FIG. 1.

FIG. 2.



The instrument has been designed for me by Messrs. Weiss and Son, 287, Oxford-street, London, W.

Barton-on-Humber. CHAS. A. BECK, M.D., L.S.A.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 4, 1916.

The Effects of Fatigue on Industry and Efficiency.

THE effects of fatigue on industry and efficiency have been the subject of many articles and communications in our columns since this nation began to apply itself seriously to the business of winning the war, but the physiological aspect of these effects has never been put more aptly than it was last week in the Chadwick lecture delivered by Professor WILLIAM STIRLING before the Royal Society of Arts. Fatigue may be due to overwork of the whole organism or of its individual parts, and, as Professor STIRLING pointed out, both objective and subjective symptoms have to be reckoned with and the appropriate tests applied. Fatigue is a universal concomitant of life, but the diminished output associated therewith is not necessarily accompanied by any sense of fatigue recognisable by the worker. The loss of excitability may be unconscious, and, indeed, in mental work the sense of fatigue may be present when facts show that an actual increase of work is being done. This apparently illogical happening is observed in certain workers when within sight of the end of the task; feeling that so far all has gone on well, and noting that only for a space of time will the strain be continued, the worker finds that he can make a last but great call upon his unsuspected reserves—like the long-distance runner he can sprint to the tape. The phenomenon exactly contradicts the more common experience that in the closing stages of work the output dies quickly down and time is wasted. This is the difference between a conscientious worker, who takes an interest in and feels responsibility for his work, and the beast of burden.

Professor STIRLING attributed the physiological process of fatigue to two causes: the using up of organic forces or energy, and the wear and tear of the organs which are overworked, so that matter and energy are consumed while restitution does not keep pace with work. These words, though there is nothing whatever novel in their teaching, which is closely supported by the report of Professor A. F. S. KENT to the Chief Inspector of Factories upon the association between fatigue and output, call for particular attention at the moment. We all know that to keep our Army at its present state of efficiency, and to replace the wastage which, however carefully thought out the management of our forces may be, remains terribly large when such masses of men are concerned, a regular influx of recruits is required from day to day. The age-limits for recruiting have more than once been extended as our operations have grown in magnitude, and a rigorous process of inquiry into the various headings under which exemption can be obtained from military service is proceeding to-day. This is an absolute necessity of the situation in which we stand—a very strong situation, be it remembered, if all classes of the community can be brought into line for extended coöperative effort. Those who would point to the overwork which various "combing out" processes may entail upon the residue are apt to forget that to be a soldier in time of war, and in such a war as that wherein we are involved, is also a very fatiguing occupation; and they should remember not only this fact, but also that the work of the soldier, like that of the civilian, will assuredly be subject to physiological laws and will decrease in quality and quantity if proper intervals of rest are not forthcoming. At this moment the physical conditions of our Army are of paramount importance to the nation, while the authorities are making their net as inclusive as possible. But it is necessary that recruiting should be carried on under a vigilant medical eye, for there is no economy in paying a man to fight for his country whose physical condition is so bad, or rapidly becomes so bad, that time and money have to be spent in trying unsuccessfully to bring him to a reasonable standard. The stories which have appeared in the daily press now and again detailing the recruiting of grossly unfit persons, must not be taken as a fair sample of what is going on generally; it is inevitable that all such instances of negligence or of pig-headedness should obtain publicity and should thereby gain an importance to which their numbers do not entitle them. But with our growing knowledge of the effects of fatigue upon the organism and upon the resulting work, we must all see the necessity of not supplying to the Army material that cannot reasonably be depended upon to stand the strain to be exacted.

It will be remembered that last year a committee was appointed with the concurrence of the Home Secretary and under the chairmanship of Sir GEORGE NEWMAN, the principal medical officer to the Board of Education, with the following reference: "To consider and advise on questions of industrial fatigue, hours of labour, and other matters affecting the personal health and physical efficiency of workers in munitions factories and workshops." This committee has made a number of valuable reports to the Ministry of Munitions, the gist of which was to point out that the management of our factories has hitherto been less based on experimental science than has been the case in the business concerns of Germany; and the scientific and physiological aspects of fatigue as described in Memorandum 7 show that much more could be done to deal with the problems of industrial fatigue and modify the ill-effect and reduced efficiency of the want of proper organisation. Strenuous efforts, we have every reason to believe, have been made to remedy this condition of affairs, and it is with the plight

of the munition workers that we have so far been most concerned; but it is not here probably that the effects of shortage of man power will be first felt, for the risk of depleting the munition factories and reducing their output is so obvious that it will not be taken. A large host of clerks, typists, and other sedentary workers have been employed since the war broke out in operations requiring unremitting attention and for spells which have no parallel for similar occupations in times of peace. Here women have come forward and relieved male labour to a very appreciable extent, but here also will the first effects of drastic recruiting be seen. Great responsibility may be thrown in this connexion upon the civilian medical profession—a sadly reduced body of workers. For from them will much help and information be expected if any general investigations should be carried out with a view of arriving at conclusions based upon larger evidence than any yet forthcoming; and it seems to us that some more far-reaching inquiries than any which have hitherto taken place will have to be instituted into the effects of fatigue on industry and efficiency.

The Prohibition of Alcoholic Beverages.

A MEMORIAL which is in preparation, and which has already appeared in the public press with a thousand influential signatures attached, asks the Government to suspend all drink licences throughout the kingdom for the period of the war. The appeal is based on a plea to put the nation at its full strength by removing "a danger which holds back the hour of early victory and throws a shadow over the vision of peace." With the weakening power of alcohol removed, the signatories claim that the national effort against the enemy will gather increased strength. It is not drunkenness alone which endangers the supply of munitions, but, says the memorial, "the constant sapping of men's energies by alcohol." The suspension of the liquor traffic during the war and the conversion of the public-houses into houses of refreshment will, it adds, quicken up the civil and fighting populations, will raise new fire of resolution in the people, and will give to millions the first opportunity they have ever had of breaking old habits of weakness and forming new habits of strength. The appeal is not made by temperance reformers as such, but by thoughtful men in every sphere of business and professional life.

The sapping of men's energies by alcohol is, of course, a medical commonplace, and there cannot remain many people who refuse to endorse the statements in the memorial regarding this danger. If we accept it as critical at the present time we can only picture two classes from whence opposition to the suspension of the traffic will come. First there are some—but we cannot think many—who do not believe that self-control can be strengthened by limitation of temptations to excess. A study of the rapid fall in convictions for drunkenness in nine English cities and towns since the restrictions imposed by the Central Control Board may help to convince them to the contrary. But those who are financially interested in the production or sale of liquor have in many instances a private code of self-control so strict that it is not easy for them to comprehend the weakness of others. Secondly, there are some who believe that the consumption of alcohol has advantages which compensate for the admitted dangers. For the latter class the case may be stated thus: Alcoholic liquids may be taken as food, medicine, or luxury. It is established that about one ounce of absolute alcohol is the limit which can be burned up in the body within a period of 24 hours without paralysing or narcotic effect and without the appearance of unchanged alcohol in the excreta, and one ounce of alcohol supplies about as much fuel as one ounce of margarine—that is, 200 calories. Now one ounce of alcohol, as we pointed out many years ago, costs in the form of cheap spirit 1½*d*., in the form of beer 3*d*., in the form of heavy wines 4*d*. to 6*d*., in the form of light wines about 1*s*., and to these prices some 40 per cent. must be added during war-time. One ounce of margarine costs less than ½*d*. Alcohol in the quantity which can be taken as food is a wasteful food. There is little doubt in the minds of hospital staffs and committees about the value of alcohol as a drug; it has its place, but in the past it was over-estimated. The quantity of alcohol used in treating the sick poor may fairly be taken as a criterion, and a recent example is suggestive. In reply to a Parliamentary question on Oct. 18th last it was pointed out that the cost of alcohol administered to patients at Guy's Hospital had been reduced from £1576 per annum to £151, at Leeds Infirmary from 6*s*. 6*d*. per head per annum to 2*d*., and at Wandsworth Infirmary from 5*s*. 3*d*. per head per annum to half a farthing. As a drug, therefore, alcohol is found to-day to have a much restricted application. But we are here leaving out of count its use as an adjunct to digestion, and one of the weak points in the arguments of the strict teetotaller has always been his inability to believe in the existence of such an effect of a small dose of alcohol in a pure and agreeable form. In normal times the claim for the use of alcohol as a luxury cannot be passed over. One of our great thinkers stated the case reasonably when he said that wine used in moderation seems to add to the agreeableness of life, and whatever adds to the agreeableness of life adds to its resources and power. With the major part of our young manhood serving under conditions in which life is the reverse of agreeable, those who remain can hardly be wrong in forgoing this agreeableness as part of their contribution to the cost of the war. If the abstinence produces real ill-effects, then will be the time to fall back upon alcohol—alcohol as a drug.

For the useful employment of alcohol, when prohibited as a beverage, there need be no fear. The memorialists look to the cessation of its manufacture and the utilisation of its raw materials—potatoes and grain—as immediate sources of food-supply. And true it is that there is an inevitable loss of energy in the conversion of these more highly organised bodies into the simpler alcohol:

only some 60 per cent. of the energy in the barley grain or the potato flour remains in the resulting beer or spirit. But if for the present some of the brewing and distilling must go on there are other ways in which ethylic alcohol can be employed. Doubtless a large proportion of the available production is already used directly or indirectly in the manufacture of munitions. But there are a thousand different directions in which alcohol is of service to mankind in the arts and manufactures. It is known that in Germany before the war one-half of the alcohol produced was consumed for various technical purposes. Alcohol is, next to water, the most valuable known solvent, and it has over water the great advantage of a lower boiling point. The shortage of pure alcohol in pharmacy for the preparation of drugs, and in all kinds of laboratory proceedings, is a serious evil, and the high price consequent on the duty which must be paid for its potable employment prejudices its scientific use. Alcohol, if prohibited as a source of mischief or an evidence of luxury to the community, may remain in part as an indirect blessing.

Annotations.

"Ne quid nimis."

UNQUALIFIED TREATMENT OF VENEREAL DISEASES.

SEVERAL correspondents have written urging the necessity of an active campaign for the suppression of the treatment of venereal diseases by unqualified persons. The Royal Commission was very wide-awake to the dangers of the present state of affairs, including the share therein contributed by druggists, herbalists, and advertisement of all sorts. Section 190 of the Report runs, "unqualified practice in these diseases is a disaster, and its existence is a main hindrance to the eradication of venereal disease." But the Commission also realised that the education of the public and the provision of free treatment would tend to diminish the evil of quacks, instancing the fact that in the Army, where instruction and treatment are well given, there is hardly any resort to unqualified practitioners. The Commission therefore concluded that penal measures against unqualified practice would at present prove inoperative, and decided to press forward with the utmost speed the positive measures of systematic free treatment and enlightenment—in short, not to prohibit the sale of inferior goods until a better brand was available. At the same time, in common with the Select Committee on Patent Medicines, the Royal Commission decided that all advertising of venereal nostrums ought to be stopped at once. Lord Sydenham emphasised the need for the suppression of quack advertisements in his presidential address on the work of the National Council and again last week at the Mansion House meeting, and the matter gained at once in importance by a statement made by the President of the Local Government Board later at that meeting. Mr. Long's words were: "Lord Sydenham said he hoped we would deal with the development of quack medicines and the treatment by quack doctors. If public opinion supports a policy of that kind, and if I can find—which, let me say, I have not yet done—a real working proposal which would have those effects, I shall be ready to do my best to carry it through Parliament." This offer of Mr. Long's should be taken up at once, and no time lost in supplying him with a working proposal for dealing with the advertising of remedies for venereal diseases. All are agreed on the necessity for its prohibition. It should not require any great ability to draw up a simple measure embodying the proposal, which could then come into immediate force. With his wares no longer forced on public attention, the unqualified practitioner would compete to less advantage with the treatment centres. The penalising of the dwindled unqualified practice might then be dealt with at a later time, when the authorised schemes of treatment will have proved themselves efficient.

THE CONSERVATION OF MYDRIATIC DRUGS.

ATROPINE, even of absolute purity, is not a single chemical substance, but is to all intents and purposes an intimate mechanical mixture of right- and left-handed components, these being the isomeric dextro- and lævo-hyoscyamines, which differ greatly in physiological effect. Mr. H. R. Jensen, M.Sc., writes from the laboratory of Messrs. Evans, Sons, Lescher, and Webb, Limited:—

The purest atropines of commerce, of course, contain these constituents in almost precisely equal quantities—the solanaceous plants never—but samples have been examined in this laboratory containing as much as 59·5 per cent. lævo- and 40·5 per cent. dextro-hyoscyamine, which specimens are only undesirable from the standpoint of therapeutic uniformity. With the prevailing scarcity of atropine the advantages of l.-hyoscyamine may be emphasised. The greatest use for this drug is that dependent on its mydriatic property, and Cushny,[1] in exact weight experiments by injection into a cat, demonstrated that 0·045 mgrm. of lævo-hyoscyamine (97·4 per cent. optical activity) had quite the same pupil effect as 0·55 mgrm. of dextro-hyoscyamine, and hence was twelve times the strength of the latter, which makes the lævo- theoretically 1·84 times the mydriatic strength of atropine—he actually observed that 0·025–0·03 mgrm. of lævo-hyoscyamine produced the effects of 0·06–0·0625 mgrm. of atropine. The salivary gland intensity was shown to be of a similar order, and the cardiac effect even greater. But atropine was found to possess greater stimulating power on the spinal cord of the frog owing to the d.-hyoscyamine having a stronger specific strychnine-like action on the cord. Laidlaw[2] later showed that by using super-pure derivatives of the highest optical activities, the intensity of l.-hyoscyamine could rise to 100 times that of dextro-, and thus one of l.-hyoscyamine would be equivalent to 1·98 of atropine, an increase in strength quite out of proportion to the slight increases in purity, indicating dynamic or other influences resulting in two mixed drugs not giving the mean effect of the constituents.

In view of the fact that raw materials now available at least ensure a supply of l.-hyoscyamine, which can only be transformed into the much less active atropine with both chemical and physiological losses, this aspect may become more important than the actual costs of production. Mr. Jensen states, further, that two large samples of Egyptian henbane (Hyoscyamus muticus) were found by him to actually yield at least 83 per cent. of their alkaloids as l.-hyoscyamine of full activity, which content scarcely depreciated in the processes employed for isolation. Specimens of salts prepared therefrom having a specific rotation for the basic ion of $-31{\cdot}7°$ (i.e., an activity of

[1] Pr. Amer. Physiol. Soc., 1903, 14; J. Physiol., 1904, 30, 176.
[2] Tr. Chem. Soc., 1909, 95, 1969.

97·3 per cent. lævo-, or similar to Merck's), were found in systematic use by a prominent ophthalmologist to have special advantages, it being concluded that for ordinary clinical use locally, 0·5 per cent. solutions of the salts had an intensity indistinguishable from 2·0 per cent. solutions of atropine sulphate. It may be that in the transient action of drops, rapidity of action is a further factor in so enhancing the intensity. Mr. Jensen concludes—

> Solutions kept a month or two showed no appreciable loss of activity, and although auto-racemisation is known to occur in the presence of moisture, apparently an equilibrium or great retardation occurs before this has proceeded far. Finally, the use of l.-hyoscyamine, even in 1 per cent. solutions, has so far been unattended by those symptoms of toxicity which frequently accompany atropine. The waste of mydriatic material is obvious, and that it is due not to the restraints imposed by former prices, but perhaps to the conservatism of medicine is shown by the following pre-war values: atropine 1–1·3, l.-hyoscyamine (95 per cent.), 1·9; super l.-hyoscyamine, 8–12, which latter ultra refinement can be seldom required. The miscalled "amorphous hyoscyamine," which has specific uses, had the value 6. There is no reason why permanent supplies of l.-hyoscyamine should not eventually be available to any extent demanded by the medical profession.

In view of the natural variation in the l.-hyoscyamine content of belladonna, accentuated by numerous methods of obtaining its galenical preparations, an advance in therapeutics would, no doubt, occur if this drug were controlled not only as to its so-called "atropine" content, but also as to a definite proportion thereof of the much more active l.-hyoscyamine.

SUPRARENAL ATHEROMA AND ITS TREATMENT.

SOME experiments have recently been carried out by Dr. Fabio Marabotto, and published in *Annali dell' Istituto Maragliano*, which, although in a preliminary stage, throw light on the pathology of arterio-sclerosis. By making use of an aqueous solution of suprarenal capsule one part to three of physiological salt solution, Dr. Marabotto found that intravenous injections of $\frac{1}{4}$ to $\frac{1}{3}$ c.c. caused marked aortic atheroma in rabbits. On the other hand, no such effect was produced either by subcutaneous injection or oral administration. A second series of experiments were undertaken to investigate the action of a suprarenal toxic serum, when administered simultaneously with suprarenal extract, on the condition of the aorta, in other words to ascertain the behaviour of the animal organism with regard to the production of suprarenal atheroma when under the influence of treatment by suprarenal toxic serum. To obtain this serum, rabbits were inoculated with small repeated quantities of suprarenal emulsion for the space of a month, giving the injections every fourth day. After the last injection the animal experimented on was left quiet for 10 days and then bled. The collected serum, which separated spontaneously, was immediately inactivated by keeping it for half an hour at a temperature of 56° to 58° C., being then sealed in sterilised tubes and kept in ice. Alternate injections of suprarenal extract and the toxic serum, when the latter was given subcutaneously, gave rise to unimportant changes in the aortic coats absolutely not to be compared in their insignificant extent and intensity with those observed in animals subjected exclusively to intravenous administration of suprarenal extract. When under similar circumstances the toxic serum was administered by the mouth very slight changes in the aorta were noted resembling atheroma, but more extensive and intense than when the serum was given subcutaneously. These results seem to give some indication of the possible benefit of injections of suprarenal toxic serum in the treatment of arterio-sclerosis, and we await with considerable interest the publication of Dr. Marabotto's further researches on the histological aspect of his experiments.

THE EDITH CAVELL HOMES OF REST FOR NURSES.

AN appeal has been issued on behalf of these homes, signed by Sir William Robertson, Lord French, Lady Haig, Lady Jellicoe, and others. As a beginning a freehold house, which would deal with the needs of about 100 nurses yearly, has been offered as a gift at Coombe Head, Haslemere, Surrey, provided that a fund sufficient for its permanent endowment as a suitable home can be raised. Donations should be sent to the honorary secretary, 25, Victoria-street, London, S.W. Messrs. Barclay and Co. are the bankers. We cannot conceive a worthier object for donations. "Of all the many shameful deeds," writes Sir Arthur Conan Doyle, "perpetrated by the Germans in the war, there has been none more cold-blooded, and therefore more odious, than the execution of the saintly woman, Edith Cavell." This feeling is universally held, and can be demonstrated in no more effective way than by subscribing to the foundation of Homes of Rest for Nurses, for the institution of these was the cherished hope of Edith Cavell.

CYANOCUPROL AND TUBERCULOSIS.

IN the August number of the *Journal of Experimental Medicine* some carefully planned experimental and clinical facts have been published by Dr. Gensaburo Koga on the value and effects of a substance called cyanocuprol upon tuberculosis. Both copper and cyanides are known to exert a powerful inhibitory action upon the tubercle bacillus. A compound of the two, however, unless specifically treated, will exert too active a lesional reaction, but a method has been evolved which will permit their bactericidal effects whilst checking too severe a tissue response. The first preparation employed was a specifically prepared solution of potassium cyanide; it was called solution A. Into guinea-pigs, 2 mg. of the human type of the tubercle bacillus were introduced under the skin on the left side of the chest, and observations were made on the duration of life, body weight, and changes in the various organs, especially the growth of the tubercle bacilli. These animals were used as controls and compared with others similarly infected, but which received hypodermic injections of the liquid. Control animals developed extensive tuberculosis, whilst of those treated with liquid A, 15 in number, two lived on in apparent health, five died of intercurrent accidents, one only showed progress in tuberculous lesions, whilst in the remaining seven all pathological changes were arrested. Next, the conjunctiva of the eye was experimentally infected and the same liquid A tested. In the control animal the infection was progressive, whilst in three animals treated with liquid A it was suspended. Liquids A and B (a slight modification of A) were now tested in a similar way in comparison with three other preparations at present regarded with favour as curative agents for tuberculosis—copper chloride, albumin-free tuberculin, and

iodotuberculin. Forty animals were used, ten as control. Liquid A was found to be the most efficient, although it did not completely heal the tuberculous lesions. After other experiments, which led to evolving an even more potent liquid, D, and also established the most suitable method of dosage and administration, this liquid, now called cyanocuprol, was tried in clinical cases. There are, of course, many difficulties in testing clinical effects with accuracy, difficulties not met with under experimental conditions. But as near an approach to accuracy as could reasonably be expected in the series of 63 cases of tuberculosis treated was obtained. Twenty-five cases are claimed as "cured," as shown by gain in body weight, temperature below 37° C., no or nearly no physical signs, bacillus-free sputum where previously bacilli abounded, and the patient being able to do regular work. Of the remainder, 22 improved, three died, and nine were still under treatment. The day after injection physical signs increased, which lessened about the eighth or ninth day. Repeated injections showed diminution of regional phenomena and often final disappearance. The results in five cases of tuberculosis of lymphatic glands were very good. The writer concludes that "the preparation greatly improves or apparently cures pulmonary and surgical tuberculosis in the first and second stages." He obtains beneficial effects in the third stage. The preparation must be given intravenously, though the manner of action is not yet entirely clear. In a paper published in the same issue by Dr. Morisuke Otani, further clinical results are published, this writer concluding that "cyanocuprol is markedly effective in tuberculosis and we believe that it will play an important part in clinical medicine." Both papers bear the mark of careful observation; the results are stated with studious moderation, and further observations will, we hope, be made on similar lines.

THE METROPOLITAN WATER-SUPPLY.

THE condition of the metropolitan water-supply during the month of July was satisfactory. The rainfall was 1·54 inch, being 0·77 of an inch below the average mean rainfall for that month during the previous 33 years. Both bacteriological and chemical examination of the raw waters showed on the whole an improvement, while the filtered waters yielded results better than their respective averages in each case. As regards typical B. coli, the filtered waters were practically sterile.

THE NATURE AND TREATMENT OF CARBON MONOXIDE POISONING.

Professor Yandell Henderson, of Yale University, has recently called attention in the *Journal of the American Medical Association* to a prevalent error as to the nature of carbon monoxide poisoning which leads to a corresponding error in treatment. The subject is important, for this gas is responsible for more deaths than all other poisonous gases taken together. The attraction of carbon monoxide for hæmoglobin is 250 times as strong as that of oxygen, but it is wrong to suppose that the resulting combination is permanent or that any lasting deterioration of the oxygen-carrying power of the hæmoglobin is produced. This may be shown by the following experiment. A drop of blood is diluted with water, a drop of very dilute ammonia is added, and the reddish-yellow solution is shaken with air. One-third of this solution is poured off in a test-tube, while the remaining two-thirds are shaken up with illuminating gas. This portion assumes in a few minutes the cherry-red colour of carbon monoxide hæmoglobin. It is now divided into two parts, one of which is set aside in a third test-tube, while the other is vigorously shaken with air. In a few minutes this sample loses its cherry tint and regains the appearance of the normal blood set aside in the first test-tube. The "mass action" of the oxygen of the air has displaced the carbon monoxide from its combination with hæmoglobin. To all intents and purposes the blood is the same as if it had never been combined with the hæmoglobin. Similarly, when a man poisoned by carbon monoxide is brought into fresh air the combination of his hæmoglobin with the gas immediately begins to break up. The higher the percentage of oxygen in the air inhaled the sooner the gas is displaced. For 15 or 20 minutes after removal from the poisonous atmosphere (but not for more that half an hour) it is beneficial to administer oxygen, pure or with air, by an apparatus which does not allow rebreathing. Even when only air is breathed the mass action of its oxygen is usually sufficient to displace the greater part of the carbon monoxide in an hour or less, so that the oxygen-carrying power of the hæmoglobin is restored sufficiently for the patient's needs. This result is facilitated by the rapid breathing usually developed within half an hour if the patient is not too profoundly asphyxiated. Many never recover consciousness and die a day or two later. The prolonged coma and subsequent death are due to injury to the brain and other organs from insufficient supply of oxygen at the time the patient was breathing the gas. After the parenchymatous degeneration produced no method is known by which the affected tissues can be restored. As far as is known, nature does all that is possible. Authorities, evidently under the view now disproved that the coma is due to retention of carbon monoxide, advocate bleeding, infusion of oxygenated saline solution, and transfusion of blood. Such procedures Professor Henderson considers not only useless but injurious. He refers to the cases of three Filipinos of approximately the same age, weight, and physique overcome by illuminating gas while sleeping in a room. One was treated during the following day by withdrawing blood and injecting oxygenated saline solution, another by transfusion of blood, and the third only by nursing. Only the last recovered. Thus it appears that all that can be done in carbon monoxide poisoning is to perform artificial respiration if natural respiration is feeble or absent, to administer oxygen for half an hour (longer is useless), to keep the patient warm if his temperature has fallen, and to supply water to the system, preferably by Murphy's drip method.

THE Bradshaw Lecture of the Royal College of Surgeons of England will be given by Colonel Charters J. Symonds on Dec. 15th, the subject being "Gunshot Injuries of the Spinal Cord." Surgeon-General Sir G. H. Makins will deliver the Hunterian Oration on Feb. 14th, 1917. An autumn course of lectures for first-aid and ambulance students, by Professor A. Keith, on the Anatomy of the Human Body, is being given every Monday, Wednesday, and Friday during November (up to Nov. 27th), at 5 P.M. A second series is announced for January and February, 1917.

THE TREATMENT OF SEPTIC WOUNDS: CARREL'S STERILISATION METHOD.

AT a special meeting of the Surgical Section of the Royal Society of Medicine on Oct. 31st, with Colonel CHARTERS J. SYMONDS, the vice-president of the section, in the chair, Dr. SHERMAN, of Pittsburg, delivered a lecture on the sterilisation of wounds by the method of Carrel. He pointed out that it had been authoritatively stated that 75 per cent. of the deaths from wounds in war after the first 24 hours were due to sepsis, and that in the case of some wounds the percentage was even higher. He alluded to the various attempts, more or less successful, which have been made from time to time to sterilise septic wounds, and urged the need for the standardisation of the methods. Dr. Carrel, he said, had experimented with some 200 different antiseptics, ultimately deciding that Dakin solution was the best, especially in the modified form devised by Dr. Daufresne. The composition of the solution as now employed was stated to be as follows:

Materials required: Chloride of lime (containing 25 per cent. of active chlorine), 200 gm.; sodium carbonate (dry), 100 gm.; and sodium bicarbonate, 80 gm. The chloride of lime is put into a 12-litre flask with 5 litres of ordinary water, shaken vigorously for a few minutes, and left in contact for from 6–12 hours. At the same time the carbonate and bicarbonate of soda are dissolved in another 5 litres of water. The salt solution is then poured into the flask containing the macerated chloride of lime, and the mixture, after being shaken, is stood to allow the calcium carbonate to be precipitated. After about half-an-hour the liquid is siphoned off and filtered through a double paper to render it clear. It should then be kept in a dark place.

To obtain certain results the exact solution must be employed, and it is especially important that there should be no free caustic alkali, and it must contain not less than 0·45 per cent. and not over 0·5 per cent. of sodium hypochlorite. With less than 0·45 per cent. the fluid is not sufficiently active, and with more than 0·5 per cent. it is irritant. The original Dakin solution was said to contain 0·6 per cent. The action of the solution is most satisfactory if used in the first 24 hours after the infliction of the wound, but it is also of very great value even if employed much later, though necessarily the time taken in sterilisation is longer.

The gist of Dr. Sherman's address is as follows:—

Although the modified Dakin solution is of immense value, Carrel holds that the technique to be employed is of still more importance. The apparatus employed consists of a glass flask, graduated, to contain the Dakin fluid; from this comes a rubber tube, ending in a small glass tube, to which can be attached one or more rubber tubes. Each of these tubes is closed at the end, and in the sides of the tubes many small openings are made about a centimetre apart. The skin of the part is cleansed and painted with solution of iodine, and this is done whether the wound is recent or late. All foreign bodies are removed. The wound is laid open so that all parts of it may be reached, and the rubber tubes are passed into all the recesses of the wound; pieces of gauze are placed lightly round and between the tubes, so as to separate them, and at the same time the gauze will assist in retaining the solution in the wound, but the wound is not to be "packed." The Dakin solution is then allowed to flow from the container into the wound, and passing from the tubes it fills the wound completely. The wound should be refilled with the solution every two hours and re-dressed every day. The effect on the wound is striking. At first the number of microbes present is very great, in fact it may be called infinite; and many polynuclear leucocytes are present. But as the days go by the number of microbes steadily diminishes until very few are present, and when only one bacterium can be found in five ordinary fields of the microscope on five successive days the wound may be regarded as practically sterile, and it will be safe to employ sutures, for no suppuration will ensue, and not even a stitch abscess will develop. The sterility of the wound is strikingly shown by the fact that it is quite safe to plate compound fractures which have been sterilised in this way. If necrosed bone is present in a wound and cannot be removed it will not be possible to sterilise the wound. The method is not applicable to the eye or to the peritoneal cavity; and the solution cannot be injected into veins.

Dr. Sherman gave particulars of many cases in which the method had been employed, and said that the mortality had been greatly reduced, and that amputations had become very much less frequent. Especially he claimed that the time taken for the complete healing of a wound could in this way be greatly shortened, saying that wounds which otherwise took months to heal healed under his technique in as many weeks. The percentage of failures was small, yet in order to obtain the best results the nurses and the assistants must be carefully trained.

The lecture was illustrated by a large number of lantern slides of photographs, some of which were coloured, and by skiagrams, showing clearly the technique employed and the results obtained.

In the discussion which followed the lecture, Sir W. WATSON CHEYNE said that the illustrations depicted results such as had not been obtained before. The paper coincided with his view that the only likely way to obtain good results was by the use of antiseptics.—Mr. JOCELYN SWAN held that the mechanical effect of the treatment was largely responsible for its success. He thought that the best results followed alternate treatment by hypochlorite and hypertonic salt solution. His experience of the progress of wounds which arrived in England after secondary suture in France was not satisfactory; not infrequently they had to be reopened.—Colonel CHARTERS SYMONDS hesitated to ascribe all the benefit to the hypochlorite solution; many other antiseptics would accomplish the same thing, but the hypochlorite method might be quicker. The results in compound fracture were certainly better than those obtained at base hospitals by other methods. He was satisfied that intermittent was better than continuous application of antiseptics.

CONTROL OF VENEREAL DISEASES.

THE BOROUGH OF PORTSMOUTH SCHEME.

PORTSMOUTH is to be congratulated on being first in the field with a scheme for the control of venereal diseases, and we understand that the initial difficulties have been got over and only the formal approval of the Local Government Board remains to be obtained. The principal points of the scheme, which has been drawn up by Dr. A. Mearns Fraser, medical officer of health of Portsmouth, on the instruction of his health committee, are as follows:—

(1) The treatment will be carried out at the Royal Hospital under the direction of a specially trained medical officer. As there may be temporary difficulty in getting a full-time officer, it is proposed for the present to appoint Captain A. Campbell, R.A.M.C. (T.), who is doing similar work at the Hilsea Military Hospital. To commence with, the clinique is to be open on three afternoons and evenings a week, female patients being seen from 3.30 to 5 and male patients from 6 to 7.30. Two beds will be provided for each sex. The treatment is to be free to every patient without distinction. The medical officer and staff to be appointed by the Hospital Committee of Management, subject to approval of the Local Government Board.

(2) Laboratory facilities are to be provided at the Royal Hospital available for the medical officer in charge of the treatment centre, for poor-law and other medical officers, and for medical practitioners generally. The need for a properly equipped pathological laboratory has long been felt in Portsmouth. At the present time all pathological material has to be sent to London for examination, and the provision of a competent pathologist on the spot would give the much-needed opportunity for direct consultation between the medical man and the pathologist. For the present the part-time services of Captain J. A. D. Radcliffe, R.A.M.C., could probably be obtained.

(3) Salvarsan or its substitute is to be issued free to medical practitioners by the medical officer of the treatment centre and by the medical officer of health.

(4) Apparatus for collecting material for examination from suspects is to be obtainable free of charge by medical practitioners on application either at the town-hall or at the treatment centre.

(5) A committee is to be formed, including representatives from the various public bodies and voluntary agencies, to advise the council in regard to measures for disseminating information as to the scheme as well as for the control of venereal diseases. The suggestion is made that the local medical committee should appoint representatives to assist the committee in addition to the three medical men now serving on the health committee.

Emphasis is laid on the intention to observe the strictest confidence in regard to persons attending the treatment centre. Their names and addresses will be required by the

medical officer solely for the purpose of communication with them in connexion with their treatment, and under no circumstances to be divulged to any third person.

Dr. Mearns Fraser has made a provisional estimate of the cost of such a scheme for the first year. Portsmouth has over a quarter of a million inhabitants, and is, to boot, an important naval and military centre. The provision must therefore be adequate. The expenses come under two heads: (1) the adaptation of suitable premises at the Royal Hospital, together with the necessary instalment of apparatus and instruments; and (2) the annual maintenance. The Royal Hospital authorities did not propose to make any profit out of the scheme, and the following estimate is considered to be the outside cost of treatment:—

1. Adaptation of premises, £17; purchase of instruments, £60; total, £77.
2. Maintenance for one year, £40; laundry and cleaning, £50; fuel, heat, and lighting, £5; domestic, £40; general administrative charges, £100; total, £235.
3. Payment of medical officer at rate of 10*s.* per hour, not exceeding £25 per month, £300.
4. Nurses and orderly, £250.
5. Drugs, including salvarsan issued to practitioners, £200.
6. In-patients' board, £30.
7. Cost of pathological laboratory facilities, fitting of room, water, gas, &c., £50; appliances and instruments, £120; total, £170.
8. Payments for pathological reports at rates to be agreed upon, minimum 100, £150.
9. General: Apparatus for collecting material, printing, post, literature, lectures, &c., £50.

Grand total, £1462.

Of this expenditure, as Dr. Mearns Fraser points out, the council will only bear 25 per cent., the Local Government Board being responsible for the remaining 75 per cent. Notwithstanding the claims of economy at the present moment, he advises the council to undertake the additional £300 a year without hesitation.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

MEETING OF COMITIA.

A COMITIA was held on Oct. 26th, Dr. FREDERICK TAYLOR, the President, being in the chair.

The following candidates having passed the required examination were admitted Members of the College: Edgar Douglas Adrian, M.B. Camb.; James Froude Flashman, M.D. Sydney; and Charles Putnam Symonds, L.R.C.P.

Licences to practise physic were granted to 89 candidates who had passed the necessary examinations.

A letter was received from Dr. W. Pasteur resigning the office of censor owing to his proceeding to France on active service. Dr. Sidney Phillips was elected a censor.

The following resolutions were passed:—

1. That in the opinion of this College administrative measures for the diagnosis and treatment of venereal diseases will only attain their maximum effectiveness in protecting the public health when the treatment of such diseases by unqualified persons is prevented by law.
2. That it is desirable that the recommendations 58 (iii.) of the Patent Medicines Committee of the House of Commons, endorsed by the Royal Commission on Venereal Diseases, should at once be carried into effect.
3. That a copy of the above resolutions be sent to the Prime Minister, to the Home Secretary, and to the President of the Local Government Board.

The President was re-elected a member of the Committee of Management.

The PRESIDENT drew the attention of the College to the fact that the 400th anniversary of the foundation of the College will occur in 1918.

A report dated Oct 3rd was received from the Committee of Management which announced: (1) That the Grammar School, Ilkley, had been added to the list of institutions recognised by the Examining Board in England for instruction in chemistry and physics; (2) that the University of Allahabad had been added to the list of Universities recognised by the Examining Board in England, and that graduates in medicine of the University be admissible to the Final Examination of the Board under the conditions of Paragraph IV., Section III., of the Regulations.

After some further formal business the PRESIDENT dissolved the Comitia.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary Surgeons: G. E. Burton, S. N. Scott, J. E. Phillips, S. R. Johnston, A. H. Flannery, and J. R. B. Robb.

The following appointment has been made:—Temporary Surgeon: D. J. Max to *Vivid*.

ARMY MEDICAL SERVICE.

Temporary Colonel H. M. Rigby (Captain, R.A.M.C., T.F.), having resigned his appointment as Consulting Surgeon, relinquishes his temporary commission.

ROYAL ARMY MEDICAL CORPS.

Temporary Lieutenant-Colonel E. A. Hanly relinquishes his commission on account of ill-health.

Majors C.A.M.C. to be Temporary Lieutenant-Colonels: A. B. Osborne and C. H. Gilmour.

Temporary Captain A. C. Renwick relinquishes his commission.

Captains C.A.M.C. to be temporary Majors: G. P. Howlett and H. Smith.

To be temporary Captains: Lieutenant A. D. Dyas, C.A.M.C., and Hon. Major C. J. Stewart, C.A.M.C.

SPECIAL RESERVE OF OFFICERS.

Supplementary to Regular Corps or Units.

Lieutenants to be Captains: J. F. W. Meenan, D. H. Paterson, G. Irving, C. A. Whittingham, G. C. L. Woodroffe.

A. L. V. Davin to be Lieutenant.

TERRITORIAL FORCE.

London Mounted Brigade Field Ambulance: Captain T. H. Chittenden to be temporary Major.

West Lancs. Field Ambulance: N. J. Allan to be Lieutenant.

London Sanitary Company: Lieutenant L. Griffiths to be Captain.

TERRITORIAL FORCE RESERVE.

Captain K. S. Storrs and Captain B. N. Ash, from Attached to Units other than Medical Units, to be Captain.

SOCIETY OF MEMBERS OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The annual general meeting of the Fellows and Members will take place at the College, Lincoln's Inn-fields, W.C., on Thursday, Nov. 16th, at 3 P.M. The following resolutions have been sent in on behalf of the Society:—

1. That this Thirty-second Annual Meeting of Fellows and Members again affirms the desirability of admitting Members to direct representation on the Council of the College, which as now constituted only represents those Members who also hold the Fellowship; and that it does so in order that the constitution of the Council of the Royal College of Surgeons of England shall be in keeping with modern ideas of true representation.
2. That as the Royal College of Surgeons is composed of about 19,000 persons, of whom nearly 18,000 are engaged in general practice, this annual meeting requests the President and Council to nominate at least two Members and (or) two Fellows in general practice to represent the interests of general practitioners in the management of College affairs.
3. That the President is hereby invited to make a statement to this meeting on the subject of the above resolution.

ANNUAL REPORT OF COUNTY MEDICAL OFFICER FOR ABERDEEN.—The report for the year 1915 of Dr. J. P. Watt, county medical officer for Aberdeen, shows a birth-rate of 23·4 per 1000 for the year, as compared with 24·1 in 1914 and an average of 24·5 for the preceding five years. The percentage of illegitimate births was 16·3, as compared with 17·0 for 1914, 18·2 for 1913, and 19·3 for 1912. The marriage-rate was 3·7 per 1000, the same as for 1914. The excess of birth- over death-rate was 9·3 per cent. The death-rate of children under 1 year was 87·8 per 1000 births, as compared with 74 per 1000 in 1914. The number of deaths from all forms of tuberculosis was 112, compared with 97 in 1914. Scarlet fever was again prevalent, though less so than in 1913, the rise being coincident with an epidemic in the city of Aberdeen, where scarlet fever reached the highest level since 1896. In the county 1913 saw the highest level of the recent wave, with an incidence of 625 cases per 100,000, as compared with 350 in 1914, and 433 in 1915. During the 23 years from 1892 to 1915, the average annual number of cases for the county was 339 per 100,000, and for the city 531 per 100,000. The case mortality was 5·2, as compared with 2·8 for 1914 and an average of 2·2 for the five preceding years, the type of the disease both in the city and in the county during the year 1915 being unusually severe.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census 7691 births and 4268 deaths were registered during the week ended Saturday, Oct. 28th. The annual rate of mortality in these towns, which had declined from 13·5 to 11·8 per 1000 in the four preceding weeks, rose in the week under notice to 12·9 per 1000 of their aggregate civil population estimated at 17,312,295 persons for the year 1915. During the first four weeks of the current quarter the mean annual death-rate in these towns averaged 12·4, against 12·0 per 1000 in London. Among the several towns the death-rate last week ranged from 4·1 in Southend-on-Sea, 6·9 in East Ham, 7·0 in Hornsey, 7·2 in Acton, and 7·4 in Wimbledon, to 18·1 in Bury, 18·6 in Great Yarmouth and in Gateshead, 18·7 in Middlesbrough, and 18·8 in Bournemouth.

The 4268 deaths from all causes were 349 above the number in the previous week, and included 316 which were referred to the principal epidemic diseases, against numbers declining from 594 to 306 in the six preceding weeks. Of these 316 deaths, 221 resulted from infantile diarrhœal diseases, 53 from diphtheria, 13 each from measles and whooping-cough, 11 from enteric fever, and 5 from scarlet fever, but not one from small-pox. The annual death-rate from these diseases was equal to 1·0, against 0·9 per 1000 in the previous week. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had steadily declined from 477 to 221 in the six preceding weeks, were again 221 last week, and included 51 in London, 28 in Liverpool, 11 in Manchester, 10 in Birmingham, and 6 each in Stoke-on-Trent and Hull. The deaths referred to diphtheria, which had been 52, 45, and 40 in the three preceding weeks, rose to 53, of which 13 were registered in London, 4 each in Stoke-on-Trent and Birmingham, and 3 each in Liverpool and Middlesbrough. The fatal cases of measles, which had been 25, 21, and 17 in the three preceding weeks, further fell to 13, and included 5 in London and 2 each in Liverpool and Manchester. The deaths referred to whooping-cough, which had been 15, 23, and 10 in the three preceding weeks, rose to 13, and included 2 each in London, Stoke-on-Trent, and Manchester. The 11 deaths attributed to enteric fever were equal to the average in the three preceding weeks, and included 2 each in London, Manchester, and Hull. The fatal cases of scarlet fever, which had been 13, 9, and 7 in the three preceding weeks, further declined to 5, of which 3 occurred in London.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had been 1037, 1074, and 1067 at the end of the three preceding weeks, rose to 1130 on Saturday last; 197 new cases were admitted during the week, against 159, 167, and 125 in the three preceding weeks. The number of cases of diphtheria, which had increased from 1262 to 1429 in the six preceding weeks, further rose to 1490; 231 new cases were admitted during the week, against 228, 194, and 188 in the three previous weeks. These hospitals also contained on Saturday last 56 cases of measles, 47 of whooping-cough, and 40 of enteric fever, but not one of small-pox. The 1053 deaths from all causes in London were 93 above the number recorded in the previous week, and corresponded to an annual rate of 12·7 per 1000. The deaths referred to diseases of the respiratory system, which had been 132 in each of the two preceding weeks, rose to 142 in the week under notice.

Of the 4268 deaths from all causes in the 96 towns, 158 resulted from violence, 362 were the subject of coroners' inquests, and 1308 occurred in public institutions. The causes of 34, or 0·8 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in London and in 13 of its 14 suburban districts, in Sheffield, Leeds, Bristol, Bradford, and in 60 other smaller towns. Of the 34 uncertified causes, 8 were registered in Liverpool, 4 in Manchester, 3 each in Birmingham and Gateshead, and 2 each in South Shields and Tynemouth.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,372,000 persons at the middle of this year 993 births and 587 deaths were registered during the week ended Saturday, Oct. 28th. The annual rate of mortality in these towns, which had been 15·1, 13·6, and 13·0 per 1000 in the three preceding weeks, fell to 12·9 per 1000 in the week under notice. During the first four weeks of the current quarter the mean annual death-rate averaged 13·7, against a corresponding rate of 12·4 per 1000 in the large English towns. Among the several towns the death-rate last week ranged from 3·1 in Ayr, 7·7 in Falkirk, and 8·3 in Leith, to 16·8 in Kilmarnock, 17·0 in Aberdeen, and 18·7 in Hamilton.

The 587 deaths from all causes were 2 below the number in the previous week, and included 53 which were referred to the principal epidemic diseases, against numbers declining from 92 to 53 in the three preceding weeks. Of these 53 deaths, 19 resulted from infantile diarrhœal diseases, 18 from measles, 5 from scarlet fever, 4 each from enteric fever and diphtheria, and 3 from whooping-cough, but not one from small-pox. The death-rate from these diseases was equal to 1·2, against 1·0 per 1000 in the large English towns. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had been 66 30, and 29 in the three preceding weeks, further fell to 19, and included 9 in Glasgow, and 2 each in Edinburgh, Dundee, and Clydebank. The deaths referred to measles, which had been 8, 16, and 2 in the three preceding weeks, rose to 18, and comprised 13 in Dundee and 5 in Glasgow. The fatal cases of scarlet fever, which had been 7, 7, and 3 in the three preceding weeks, rose to 5, of which 2 occurred in Glasgow. The 4 deaths from enteric fever, which comprised 3 in Kilmarnock and 1 in Greenock, were slightly in excess of the average in recent weeks. The deaths attributed to diphtheria, which had been 5, 4, and 12 in the three preceding weeks, fell to 4, but showed no excess in any particular town. The 3 fatal cases of whooping-cough were recorded in Glasgow, Dundee, and Aberdeen respectively.

The deaths referred to diseases of the respiratory system, which had been 94, 90, and 74 in the three preceding weeks, rose to 87 in the week under notice, but were 71 below the number registered in the corresponding week of last year. The deaths from violence numbered 30, against 17 and 26 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the registration area of Dublin 179 births and 142 deaths were registered during the week ended Saturday, Oct. 28th. The annual rate of mortality, which had been 18·7, 17·7, and 17·5 per 1000 in the three preceding weeks, rose to 18·7 in the week under notice, against 12·7 and 11·8 per 1000 in London and Glasgow respectively.

The 142 deaths from all causes included 35 of infants under 1 year and 40 of persons aged 65 years and upwards. Eleven deaths (of infants under 2 years) were referred to diarrhœal diseases, and 1 each to enteric fever, scarlet fever, and whooping-cough. The causes of 5 deaths were uncertified, and those of 4 others were the subject of coroners' inquests, while 48, or 34 per cent., of the total deaths occurred in public institutions.

During the same period 167 births and 118 deaths were registered in the city of Belfast. The deaths corresponded to an annual rate of 15·8, or 2·7 per 1000 above that recorded in the previous week, and included 24 of infants under 1 year and 21 of persons aged 65 years and upwards. Seven deaths were referred to infantile diarrhœa and 2 each to scarlet fever and whooping-cough. The causes of 2 deaths were uncertified, and those of 4 others were the subject of coroners' inquests, while 25 of the total deaths occurred in public institutions.

VITAL STATISTICS OF LONDON DURING SEPTEMBER, 1916.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the 10 diseases specified in the table was equal to an annual rate of 4·9 per 1000 of the civil population, estimated at 4,310,030 persons in the middle of the year; in the three preceding months the rates had been 4·8, 4·9, and 4·0 per 1000 respectively. The lowest rates for September were recorded in Kensington, Hammersmith, the City of Westminster, St. Marylebone, Finsbury, and Lewisham; and the highest rates in the City of London, Shoreditch, Bethnal Green, Stepney, Southwark, and Deptford. The prevalence of scarlet fever showed a considerable increase over that recorded in the preceding month; among the several boroughs this disease was proportionally most prevalent in Paddington, the City of London, Bethnal Green, Stepney, and Poplar. The Metropolitan Asylums Hospitals contained 1007 scarlet fever patients at the end of September, against 1256, 1201, and 991 at the end of the three preceding months; the weekly admissions averaged 143, against 163 and 120 in the two preceding months. Diphtheria also was much more prevalent in September than it had been in August; the greatest proportional prevalence of this disease was recorded in Holborn, the City of London, Shoreditch, Bethnal Green, Stepney, and Southwark. There were 1287 diphtheria patients under treatment in the Metropolitan Asylums Hospitals at the end of September, against 1280 and 1236 at the end of the two preceding months; the weekly admissions averaged 167, against 153 and 135 at the end of the two preceding months. The prevalence of enteric fever showed a slight rise; of the 43 cases notified during

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING SEPTEMBER, 1916.

(*Specially compiled for* THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1915.	NOTIFIED CASES OF INFECTIOUS DISEASE.												DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.									Deaths from all causes.	Death-rate per 1000 living.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON...	4,310,030	—	590	705	—	43	1	17	197	16	45	1614	4·9	—	43	3	26	16	6	386	480	1·5	3980	12·0
West Districts.																								
Paddington	131,397	—	28	13	—	1	—	1	4	—	2	49	4·9	—	—	—	—	1	—	7	8	0·8	96	9·5
Kensington	155,795	—	11	13	—	—	—	—	9	—	1	34	2·8	—	—	—	—	—	—	5	5	0·4	127	10·6
Hammersmith	118,559	—	8	12	—	—	—	—	4	—	—	24	2·6	—	—	—	1	—	—	4	5	0·5	92	10·1
Fulham	151,161	—	15	21	—	—	—	1	5	1	—	43	3·7	—	1	—	1	2	—	16	20	1·7	134	11·6
Chelsea	58,421	—	7	6	—	1	—	—	4	—	—	18	4·0	—	—	—	1	—	—	2	3	0·7	63	14·1
City of Westminster ...	135,104	—	8	12	—	3	—	—	2	—	—	25	2·4	—	—	—	—	—	—	6	6	0.6	124	12·0
North Districts.																								
St. Marylebone	100,260	—	5	10	—	2	—	—	3	1	—	21	2·7	—	—	—	—	—	1	1	2	0·3	88	11·4
Hampstead	81,760	—	9	10	—	3	—	—	1	—	—	23	3·7	—	—	—	—	—	—	—	—	—	49	7·8
St. Pancras	200,322	—	24	36	—	3	—	1	5	1	2	72	4·7	—	6	—	1	—	—	11	18	1·2	194	12·6
Islington	316,242	—	43	46	—	4	—	—	20	—	3	116	4·8	—	1	—	2	—	—	19	22	0·9	281	11·6
Stoke Newington... ...	50,527	—	5	12	—	1	—	—	—	—	1	19	4·9	—	—	—	—	—	—	4	4	1·0	40	10·3
Hackney	217,883	—	24	26	—	2	—	2	9	1	1	65	3·9	—	2	—	1	—	—	22	25	1·5	177	10·6
Central Districts.																								
Holborn	40,405	—	2	10	—	—	—	—	—	—	1	13	4·2	—	—	—	1	—	—	1	2	0·6	38	12·3
Finsbury	76,915	—	12	4	—	—	—	—	3	—	1	20	3·4	—	—	—	—	—	—	5	5	0·8	82	13·9
City of London	19,461	—	7	9	—	—	—	—	—	—	—	16	10·7	—	—	—	—	—	—	—	—	—	10	6·7
East Districts.																								
Shoreditch	103,627	—	17	25	—	1	—	—	15	—	2	60	7·5	—	1	2	1	—	1	20	25	3·1	101	12·7
Bethnal Green	120,207	—	33	33	—	1	—	—	19	1	2	89	9·7	—	—	—	2	1	1	23	27	2·9	108	11·7
Stepney	265,731	—	53	98	—	1	—	1	19	—	2	174	8·5	—	4	1	3	1	1	28	38	1·9	254	12·5
Poplar	156,247	—	31	21	—	4	—	1	8	2	5	72	6·0	—	3	—	1	1	1	35	41	3·4	199	16·6
South Districts.																								
Southwark	179,424	—	25	46	—	1	—	3	12	—	3	90	6·5	—	7	—	2	2	—	24	35	2·5	190	13·8
Bermondsey	117,188	—	11	17	—	1	—	—	1	2	6	38	4·2	—	4	—	—	1	1	11	17	1·9	144	16·0
Lambeth	284,188	—	52	38	—	1	—	—	7	3	5	106	4·9	—	6	—	2	1	—	26	35	1·6	296	13·6
Battersea...	161,945	—	21	24	—	4	—	2	6	—	2	59	4·7	—	1	—	1	1	—	16	19	1·5	142	11·4
Wandsworth	312,249	—	39	27	—	5	1	2	11	1	1	87	3·6	—	2	—	—	1	—	22	25	1·0	249	10·4
Camberwell	254,385	—	39	51	—	1	—	—	8	1	5	105	5·4	—	3	—	4	—	—	24	31	1·6	254	13·0
Deptford	110,299	—	21	23	—	—	—	1	11	—	—	56	6·6	—	1	—	—	—	—	19	20	2·4	114	13·5
Greenwich	96,385	—	6	24	—	1	—	—	2	2	—	35	4·7	—	—	—	—	—	—	9	9	1·2	86	11·6
Lewisham	164,438	—	18	17	—	2	—	—	2	—	—	39	3·1	—	—	—	2	1	—	17	20	1·6	146	11·6
Woolwich	129,505	—	16	21	—	—	—	2	7	—	—	46	4·6	—	1	—	—	3	—	9	13	1·3	102	10·3
Port of London	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

the four weeks ending Sept. 30th, 5 belonged to Camberwell, 4 each to Islington, Poplar, and Battersea, and 3 each to the City of Westminster, Hampstead, and St. Pancras. The Metropolitan Asylums Hospitals contained 35 enteric fever patients at the end of September, against 44, 40, and 35 at the end of the three preceding months; the weekly admissions averaged 7, against 5 in each of the two preceding months. Erysipelas was proportionally most prevalent in the City of Westminster, Shoreditch, Bethnal Green, Stepney, Southwark, and Deptford. The 17 cases of puerperal fever notified during the month included 3 in Southwark, and 2 each in Hackney, Battersea, Wandsworth, and Woolwich. The 16 cases of cerebro-spinal meningitis included 3 in Lambeth and 2 each in Poplar, Bermondsey, and Greenwich; and of the 45 cases of poliomyelitis, 6 belonged to Bermondsey, 5 to Poplar, 5 to Lambeth, 5 to Camberwell, 3 to Islington, and 3 to Southwark.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several metropolitan boroughs, the deaths occurring in institutions having been distributed among the several boroughs in which the deceased persons had previously resided. During the four weeks ending Sept. 30th the deaths of 3980 London residents were registered, equal to an annual rate of 12·0 per 1000, against 11·5, 10·7, and 10·6 per 1000 in the three preceding months. The death-rates for September ranged from 6·7 in the City of London, 7·8 in Hampstead, 9·5 in Paddington, 10·1 in Hammersmith, and 10·3 in Stoke Newington and in Woolwich, to 13·5 in Deptford, 13·6 in Lambeth, 13·8 in Shoreditch, 13·9 in Finsbury, 14·1 in Chelsea, 16·0 in Bermondsey, and 16·6 in Poplar. The 3980 deaths from all causes included 480 which were referred to the principal infectious diseases; of these, 43 resulted from measles, 3 from scarlet fever, 26 from diphtheria, 16 from whooping-cough, 6 from enteric fever, and 386 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded during September in the City of London or in Hampstead; among the other boroughs they caused the lowest death-rates n Kensington, Hammersmith, the City of Westminster, St. Marylebone, and Holborn; and the highest rates in Shoreditch, Bethnal Green, Poplar, Southwark, and Deptford. The 43 deaths from measles were slightly less than the corrected average number in the corresponding period of the five preceding years; of these 43 deaths, 7 belonged to Southwark, 6 to St. Pancras, 6 to Lambeth, 4 to Stepney, 4 to Bermondsey, 3 to Poplar, and 3 to Camberwell. The 3 fatal cases of scarlet fever were 12 below the corrected average number; 2 belonged to Shoreditch and 1 to Stepney. The 26 deaths from diphtheria were 19 below the corrected average number, and included 4 in Camberwell, 3 in Stepney, and 2 each in Islington, Bethnal Green, Southwark, Lambeth, and Lewisham. The 16 fatal cases of whooping-cough were 34 less than the corrected average number; of these 16 deaths 3 belonged to Woolwich and 2 each to Fulham and Southwark. The 6 deaths from enteric fever were 8 below the corrected average, and belonged respectively to St. Marylebone, Shoreditch, Bethnal Green, Stepney, Poplar, and Bermondsey. The deaths from diarrhœa and enteritis among children under 2 years of age were 455 below the corrected average number; the greatest proportional mortality from this cause was recorded in Shoreditch, Bethnal Green, Poplar, Southwark, and Deptford. In conclusion, it may be stated that the aggregate mortality in London during September from these principal infectious diseases was 49·5 per cent. below the average.

MEMORIAL TO SIR HENRY SWANZY.—The Archbishop of Dublin unveiled recently a memorial which has been erected to Sir Henry Swanzy in the Royal Victoria Eye and Ear Hospital, Dublin. Shortly after Sir Henry Swanzy's death a public appeal for subscriptions to a memorial in his memory was issued and nearly £1500 were received. This sum has been devoted to the completion of a wing of the Royal Victoria Hospital, in the foundation of which Swanzy had been active. The personal memorial which was unveiled last week is a bronze bas-relief portrait by Mr. Oliver Sheppard, R.H.A.

Correspondence.

"Audi alteram partem."

THE DIFFERENTIATION OF HEART MURMURS IN SOLDIERS.

To the Editor of THE LANCET.

SIR,—Amongst the many problems in connexion with war illness presented for solution, few are more interesting and more difficult than the distinction between organic valvular defects and their counterpart, or mimicry, occurring in the course of functional heart derangement. The importance of a correct diagnosis can scarcely be over-estimated, and the difficulties the problem presents may be gauged by the fact that a large number of cases have reached the hospitals in this country with the diagnosis of V.D H. (valvular disease of the heart), which long and careful observation and suitable treatment have proved to be functional. In the majority of these cases the diagnosis was presumably based upon the existence of a murmur, though no doubt other signs and symptoms were also taken into consideration.

The cause and detection of functional heart murmurs has interested me for many years, and my connexion with the Northumberland War Hospital has afforded me considerable fresh opportunity of investigating the subject as well as the nature of the so-called "soldier's heart" generally. But my object in writing this letter is to call attention to a method by which I believe functional murmurs can, as a rule, be distinguished from organic. I may say that in my experience a systolic bruit can be detected in the great majority of cases of functional derangement of the heart arising in some way out of war conditions, whether from strain, shell-shock, or other nervous causes. It is true these murmurs are not always present; at times they stop and remain absent for hours; they may be audible when lying and not when standing, or *vice versa;* they may diminish even to vanishing-point under examination; but frequent examinations will nearly always lead to their detection, and they are usually best heard towards the right of the apex, and especially when the patient is lying on his left side. They are not well conducted beyond the apex, and often cease when the patient draws and holds a long breath. The chief point, however, to which I wish to draw attention is the fact, which I regard as almost conclusive, that the functional apical murmur will at once become inaudible when the fingers of the observer holding the bell-piece of the binaural stethoscope press in the ribs upon the heart as the patient lies on his left side. It is well when examining the case to stand on the right side of the bed and stoop over the patient, and in this way the fingers of both hands can be employed to press in the ribs and interspace auscultated upon the heart; or the observer may be on the left side of the patient and an assistant directed to make the necessary pressure. In the case of organic murmurs—e.g., those of mitral regurgitation—the firmest pressure fails to render the bruit inaudible, and may intensify it.

I may mention incidentally that I have noticed whilst investigating heart murmurs in this way that pressure considerably modifies the presystolic bruit of mitral stenosis, for as the chest wall is being pressed in upon the apex the murmur becomes shortened and loses some of its rough character. It would seem that firm pressure renders inaudible sounds which are really due to chest-wall vibrations, and are therefore exocardiac in origin.

I am, Sir, yours faithfully,

Newcastle-on-Tyne, Oct. 24th, 1916. DAVID DRUMMOND.

THE MANUFACTURE OF SALVARSAN PRODUCTS IN ENGLAND.

To the Editor of THE LANCET.

SIR,—Major Ernest Lane has drawn renewed attention in THE LANCET of Sept. 30th to his unfortunate experiences with kharsivan. We feel that it would be unfair to the firm of chemists which was so enterprising as to place this substance at the disposal of British medical men so soon after the beginning of the war if we were not to state our own experience, which has been very much more favourable than his.

We have used about 1400 doses of kharsivan and neokharsivan (nearly all the former), the injections having been given by one of us or under our supervision. In military cases we have followed the new Army regulations for the treatment of syphilis, and in civil and private practice we have usually given the full dose of 0·6 gramme to adult males and females alike. Our experience has been the same. We have seen no symptom which could possibly be considered as being due to arsenical poisoning, no rashes, no violent reactions, and, in short, nothing which could give either of us a single moment's uneasiness as to any of our patients. In most cases there are no symptoms of any sort, but in early syphilis there is usually a slight temperature reaction, rarely exceeding 100° F., but this almost always subsides in a few hours. There is often some slight gastric disturbance; anything more than this can usually be traced to a surreptitious meal before or after the injection. Often there is a sharp movement of the bowels, rarely diarrhœa. No patient has been kept in bed for more than one night owing to the severity of the symptoms.

Most of our patients have been young and otherwise healthy men, but in the civil practice of King's College Hospital and in private there have been numerous injections in older men and in females of all ages. One of us injected a man 70 years of age, who suffered from severe cystitis due to B.coli, without any unpleasant results. We make a routine examination of the urine in all cases, and regard even a slight trace of albumin, if probably of renal origin, as a contraindication. So far we have met with no other. In all cases the patients are prepared as for an operation, being given an aperient the previous night and kept in bed for about four hours without food before the injection. They stay in bed for the rest of the day, and are only given light food. We use water that has been distilled in the laboratories of the hospital under the supervision of one of us and autoclaved immediately afterwards. We take care that the vessel containing it is not opened, even momentarily, after sterilisation until it is required for use. We dissolve the drug in water which is nearly cold, and add about five or six drops of 15 per cent. caustic soda beyond the point required for complete re-solution of the precipitate. We never use a solution which has been prepared for more than half an hour, and prefer to use it as soon as it has been prepared.

We are, Sir, yours faithfully,

W. D'ESTE EMERY,
Captain, R.A.M.C. (T.),
JOHN EVERIDGE,
Harley-street, W., Oct. 31st, 1916. Captain, R.A.M.C. (T.).

ENTEROCOCCUS IN THE URINE OF CONVALESCENT SOLDIERS.

To the Editor of THE LANCET.

SIR,—In an important paper in your issue of Oct. 7th attention is called by Major T. Houston and Captain J. M. McCloy to the importance of the enterococcus in "trench fever" and allied conditions. Certain observations made by us in the routine examination of the urine of soldiers convalescent from enteric fever, paratyphoid fever, and dysentery led us to the conclusion that military service abroad and perhaps the occurrence of lesions in the intestine were often followed by the invasion of the system by enterococci and by their excretion in the urine. In fact, urinary "enterococcic carriers" are very commonly met with among soldiers at command depôts and convalescent camps. Many of these "carriers" suffered from vague articular and myalgic pains, others had no symptoms whatever.

We find on consulting our records that in one series of 162 specimens examined 22 were found to contain enterococci. A number of these strains were tested as to their fermentative reactions, and we found that there was considerable variation among the individual strains, some having the characters of what we usually term in this country streptococcus fæcalis, and as such generally fermenting mannite, others fermented glucose, lactose, and saccharose, but not mannite, whilst some had no action on any sugar, and in this respect corresponded with the description given by French bacteriologists, such as Macé, to the enterococcus. French writers[1] have recently shown that frequently the

[1] Sartory, Lasseur et Spillmann: Diplocoque dans le Sang des Suspects de Typhoïde, Compt. R. de la Soc. de Biolog., vol. lxxviii., p. 257 (1915), and Bourges, Lancelin et Joly in Compt. R. de la Soc. de Biolog., vol. lxxviii., p. 692. Also Lebrun et Portier, ibidem, p. 440.

enterococcus gives rise to a condition clinically resembling enteric fever, and that it is often associated with the B. typhosus in other cases.

It is evident, therefore, that the enterococcus plays an important rôle in infective processes, and the work of Major Houston and Captain McCloy would seem to show that many cases of "trench fever" are due to its activity. I think most observers will agree with their conclusion, which is very cautiously stated in the following words: "Our experience with the enterococcus appears to show that when the organism is found in urine it is frequently an infecting agent." In rheumatic conditions it is very common to get enterococci in the urine, and vaccines prepared from cultures are often very efficacious in treatment. Our own observations tend to show that subsequent to an acute infection enterococci continue to be found in the urine. There is evidently a sort of subinfection which, under certain conditions, may become acute.

We are, Sir, yours faithfully,

GEORGINA DARLING, M.B., D.P.H.,
W. JAMES WILSON, M.D., D.Sc.,
Captain, R.A.M.C. (T.F.); Specialist Sanitary Officer, Belfast District.

Hygiene and Public Health Laboratory, Queen's University, Belfast, Oct. 19th, 1916.

SOLDIERS AND VENEREAL DISEASES.

To the Editor of THE LANCET.

SIR,—During the past two years the Liverpool Medical Institution has distributed over 160,000 copies of pamphlets especially written in plain non-technical language for soldiers, warning them of the dangers and disabilities incurred by contracting these avoidable diseases. The Army authorities in Egypt have reprinted the tract for their own use. We desire to enlist your support by the insertion of this letter, and invite inquiries for specimen copies from commanding officers, medical officers, chaplains, social workers, and others interested in our soldiers, addressed to the Librarian, the Medical Institution, Liverpool.

I am, Sir, yours faithfully,

CHARLES J. MACALISTER,
President.

Liverpool, Oct. 31st, 1916.

THE ETHICAL STANDARDS OF PANEL PRACTICE.

To the Editor of THE LANCET.

SIR,—In Dr. Mitchell Bruce's address to students at the opening of the winter session the following passage occurs (*vide* THE LANCET, Oct. 21st):—

It is in this way surely that you have been brought to Charing Cross Hospital to-day—not, I am sure, for purely commercial ends, which it is to be feared have been promoted by the panel.

I presume the concluding word refers to National Health Insurance practice, and it strongly suggests, if it does not actually accuse, panel practitioners of lacking in the spirit of medicine which ought to inspire them—that they are tempted by the conditions of panel practice to dishonour their calling. This is an offensive remark, uttered *ex cathedrâ*, and I trust that the young students who will later on join a panel will not accept the view that panel practice does not claim as many conscientious doctors in its ranks as any other form of medical practice. The integrity of Dr. Bruce's excellent address is marred by this unfortunate reference, which I am sure is quite undeserved.

I am, Sir, yours faithfully,

O. ECCLES.

Kensington, W., Oct. 24th, 1916.

SPINAL ANÆSTHESIA IN ACUTE ABDOMEN.

To the Editor of THE LANCET.

SIR,—The advocates of the above method make no mention of the minor drawbacks, which probably appeal to the anæsthetist more than to the surgeon. Supposing one is dealing with a case in which there are acute suppuration and general peritonitis, surely the mere act of turning the patient on to his side cannot improve the condition; and if there is a large localised abscess on the verge of rupture before adhesions have been firmly developed, then this moving about might possibly tend to break them down. Another objection is that though the superficial tissues are anæsthetised with ethyl chloride or hypodermic injection of novocaine there is still some pain caused when the needle is pushed through the deep tissues into the spinal canal, which gives rise to a certain amount of shock. There is always the drawback to a nervous patient that he is conscious of the progress of the operation, and when the peritoneum or mesentery is handled to any extent there is considerable discomfort. Lastly, anyone who has any experience of spinal anæsthesia is aware that a small proportion of cases show signs of collapse from the anæsthetic *per se*.

The most satisfactory anæsthesia in acute abdomen, in my experience, is obtained by giving the patient a hypodermic of morphine and atropine followed by gas and oxygen administered with some such apparatus as the Gwathmey, with or without the local injection of novocaine. If the latter is used then there ought to be no difficulty about getting complete relaxation, but even if it is not used the result is so good, in that there is almost complete freedom from shock, that the temporary inconvenience to the surgeon ought to be well compensated for by the advantage gained by the patient. The addition of a small quantity of ether or mixture makes very little difference as regards after-effects to the patient and helps the relaxation.

I am, Sir, yours faithfully,

HUGH R. PHILLIPS, M.D. Edin.,
Senior Anæsthetist, Italian Hospital; Anæsthetist to the King George Hospital, Royal Flying Corps, and Endsleigh Palace Hospital for Officers.

Dawson-place, W., Oct. 21st, 1916.

FALLOPIAN TUBE FOUND IN FEMORAL HERNIA.

To the Editor of THE LANCET.

SIR,—The following notes may be of interest in connexion with similar cases reported in THE LANCET of Oct. 21st and 28th:—

A woman while doing housework one afternoon was seized with a sudden severe pain in the lower part of the abdomen. She was about five months pregnant at the time, and thinking she was threatened with a miscarriage she sent for the midwife. The nurse gave her an enema, the bowels acted freely, and the pain lessened somewhat. She became worse later in the evening and I saw her about midnight. Her temperature was normal, pulse 102. Vaginal examination showed no signs of labour. The bowels had acted and she had not vomited, but she looked very distressed, and there was a slight rigidity in the lower part of the abdomen. She was a corpulent woman; she was not aware of the existence of a hernia, and it was only after careful examination that a small swelling no bigger than a walnut was found embedded, so to speak, in the fat of the right groin. It was dull on percussion, irreducible, and had no impulse on coughing; it was thought to be a strangulated femoral hernia containing a small piece of omentum. On opening the sac about a teaspoonful of turbid serum escaped. The only structure found in the sac was the fimbriated extremity of the Fallopian tube; it was intensely injected and of a dark purple colour. Doubts were entertained as to the vitality, so I excised it and closed up the femoral ring. She carried the fœtus to full term, and was delivered of a healthy male child.

The points of interest are the presence of the Fallopian tube in a femoral hernia at the fifth month of pregnancy; the difficulty of exact diagnosis, the absence of vomiting, the movement of the bowels, the dull percussion note suggested omentum. The excision of the tube has apparently not interfered with subsequent conception, for since the operation, five years ago, she has given birth to two full-term children.—I am, Sir, yours faithfully,

J. F. DEVANE, M.D., F.R.C.S. Irel.,
Hon. Surgeon, Limerick County Infirmary, and St. John's Hospital, Limerick.

Oct. 30th, 1916.

SKIAGRAMS OF GAS GANGRENE.

To the Editor of THE LANCET.

SIR,—In the report of my paper on Gas Gangrene in your issue of Oct. 28th (p. 754) an error appears. The French worker who had great experience with cases showing a fine striation believed that the *vibrion septique* was always found where that X ray appearance was seen. He recognised there were other appearances due to other organisms which were equally capable of giving rise to gas gangrene.

I am, Sir, yours faithfully,

AGNES SAVILL.

Weymouth-street, W., Oct. 29th, 1916.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

Killed.

Capt. A. T. Logan, R.A.M.C., attached Grenadier Guards, received his medical education at the University of Glasgow, where he gained the Dr. Gibson bursary, and qualified in April, 1915. He obtained his commission in the R.A.M.C. and went to the front forthwith, and has been mentioned in despatches.

Lieut. W. C. E. Bower, R.A.M.C., attached Newfoundland Regiment, received his medical education at University College, London, and qualified in 1900. After filling appointments at the Carlisle Dipensary and at the Prestwich Asylum, Manchester, he joined the West African Medical Service, and received his commission in the R.A.M.C. in the early part of last September.

Died of Wounds.

Capt. C. M. Nicol, R.A.M.C., received his medical education at the University of Glasgow and qualified M.B., Ch.B. in 1909. He thereupon joined the R.A.M.C. and was gazetted Captain in 1912. At the outbreak of war he was doing duty in Egypt, and later proceeded to France. Captain Nicol has been mentioned in despatches.

Died.

Lieut.-Col. E. Hudson, I.M.S., was a student at University College, London, and qualified in 1882. He obtained his commission in the I.M.S. in 1886, and had held the appointment of superintendent of the Central Prison, Allahabad. He served in the Chin-Lushai Expedition in 1889-90, and was mentioned in despatches. He died at Allahabad.

Wounded.

Capt. M. J. Rees, R.A.M.C.
Capt. F. Hitchcock, New Zealand Medical Corps.
Capt. H. R. Mustard, Canadian Army Medical Corps.

THE VICTORIA CROSS.

The King has conferred this distinction upon the following members of the medical profession :—

Capt. William Barnsley Allen, M.C., R.A.M.C.

For most conspicuous bravery and devotion to duty. When gun detachments were unloading H.E. ammunition from wagons which had just come up, the enemy suddenly began to shell the battery position. The first shell fell on one of the limbers, exploded the ammunition and caused several casualties. Captain Allen saw the occurrence and at once, with utter disregard of danger, ran straight across the open, under heavy shell-fire, commenced dressing the wounded, and undoubtedly by his promptness saved many of them from bleeding to death. He was himself hit four times during the first hour by pieces of shells, one of which fractured two of his ribs, but he never even mentioned this at the time, and coolly went on with his work till the last man was dressed and safely removed. He then went over to another battery and tended a wounded officer. It was only when this was done that he returned to his dug-out and reported his own injury.

Capt. Allen is the only son of Mr. P. Allen, of Scarborough, and was educated at St. Cuthbert's College, Worksop, and at Sheffield University, where he won a gold medal in 1913, and qualified M.B., Ch.B. in 1914. After holding a short appointment at Sheffield Royal Hospital he joined the R.A.M.C. in the August following, and was awarded the Military Cross last August.

Capt. Noel Godfrey Chavasse, M.C., R.A.M.C.

For most conspicuous bravery and devotion to duty. During an attack he tended the wounded in the open all day, under heavy fire, frequently in view of the enemy. During the ensuing night he searched for wounded on the ground in front of the enemy's lines for four hours. Next day he took one stretcher-bearer to the advanced trenches, and under heavy shell-fire carried an urgent case for 500 yards into safety, being wounded in the side by a shell splinter during the journey. The same night he took up a party of 20 volunteers, rescued three wounded men from a shell-hole 25 yards from the enemy's trench, buried the bodies of two officers, and collected many identity discs, although fired on by bombs and machine-guns. Altogether he saved the lives of some 20 badly wounded men, besides the ordinary cases which passed through his hands. His courage and self-sacrifice were beyond praise.

Capt. Chavasse is the younger of the twin sons of the Lord Bishop of Liverpool, and was educated at Liverpool College and at Oxford, and qualified in 1912. He was a keen university athlete, as was also his twin brother, and all four sons of the Bishop are in the Army. Capt. Chavasse, previously to the war, held an appointment at the Liverpool Southern Hospital, and on mobilisation he joined the R.A.M.C. and went abroad. He took part in the engagement at Hooge, in connexion with which he was awarded the Military Cross for conspicuous bravery.

MENTIONED IN DESPATCHES.

In a despatch from General Sir Reginald Wingate, Sirdar and Governor-General of the Soudan, dealing with the military operations in that country, the names of the following R.A.M.C. officers are mentioned :—

Lieut.-Col. F. F. Carroll, Major R. G. Anderson, Major W. Byam, Capt. R. G. Archibald, Capt. D. S. Buist, Capt. C. Cassidy, Capt. A. G. Cummins, and Capt. G. Gibbon.

Dr. A. J. Chalmers, of the Wellcome Research Laboratories, Khartoum, and Dr. E. S. Crispin, of the Medical Department of the Soudan Government, are also mentioned.

In a despatch dealing with the Navy the names of Staff-Surgeon E. Cameron, R.N., and Surgeon F. G. Hitch, R.N., are mentioned.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war :—

Second Lieut. E. H. Montgomery, Royal Field Artillery, son of Dr. E. H. Montgomery, of Mallow, Co. Cork, Ireland.
Second Lieut. R. A. S. Wilson, Seaforth Highlanders, elder son of Dr. A. S. Wilson, of St. Leonards-on Sea.
Second Lieut. C. R. P. Corbin, Worcestershire Regiment, elder son of the late Dr. E. R. St. Clair Corbin, of Beckenham, Kent.
Sergt. R. J. Watt, South African Infantry, only son of the late Dr. T. M. Watt, of Hovingham, Yorkshire.
Capt. V. H. Clay, Wilts Regiment, younger son of Dr. C. Clay, of Fovant, near Salisbury.
Second Lieut. C. J. Girling, Hampshire Regiment, elder son of Dr. C. J. Girling, of Cranborne, Salisbury.

SURGEONS FOR THE FRENCH WOUNDED.

Mr. D. H. Illingworth, Directeur-Général, London Committee of the French Red Cross, 9, Knightsbridge, S.W., writes to us as follows :—

Some twenty-five British-staffed hospitals in France are working for the French wounded. In one of these, an important 300-bed hospital in the war zone, the honorary post of surgeon-in-charge will shortly become vacant, and it is hoped to find a British surgeon who is able to undertake this responsible work. There are other vacancies, both honorary and paid, for assistant operating surgeons and house surgeons, and I shall be very pleased to furnish full details of this excellent service to surgeons who are not able to serve with the British Forces.

The supply of medical men is being very seriously drawn upon in every direction, but we hope that the Croix Rouge Française will obtain promptly the necessary assistance to their splendid work.

MEDICAL CERTIFICATES FOR MUNITION WORKERS.

The Minister of Munitions has recently called the attention of the Council of the British Medical Association to the difficulty experienced by firms engaged on munitions work in dealing with applications from workmen for leaving certificates, owing to the alleged fact that medical certificates recommending a change of employment have sometimes been issued by practitioners without sufficient consideration. We have no details of the grounds on which these certificates were issued, but it is evidently to the advantage of the health of the munition worker, who now forms no inconsiderable proportion of the total civilian population of the country, to have the supervision of his or her own medical adviser, who should state his opinion without fear or favour. And there are two reasons why the practitioner should keep an open mind and not recommend a change of employment without careful consideration of the special circumstances. In the first place, the conditions in controlled works as regards hours of employment, intervals of relaxation, provision of cheap and adequate meals, are such that a change may readily turn out to be a disadvantage to the worker. And in the second place, especially where the labour of women and young people of either sex is concerned, the workers' health has been made the direct care of the Health of Munition Workers Committee, and in many instances already the advice of nurse or of medical officer is available in the factory. Some collaboration between these and the worker's home doctor is evidently desirable, and the added knowledge might save the issue of a certificate by the latter based on insufficient or misleading data.

OBITUARY OF THE WAR.

ALFRED HUGH BENSON, M.R.C.S. ENG., L.S.A.,

MAJOR, ROYAL ARMY MEDICAL CORPS.

Major A. H. Benson, who died on active service on Sept. 24th, was only surviving son of the late Richard Benson and of Mrs. Benson, of 74, Philbeach-gardens, S.W. He was educated at St. Peter's College, Radley, and Caius College, Cambridge, qualifying in 1887. He served through the South African campaign, was wounded at Johannesburg while attached to the Gordon Highlanders, and received the Queen's medal with five clasps and the King's medal with two clasps. He settled in Cleobury Mortimer, where he built up a large practice in and around the town. On the outbreak of war he volunteered for service and served for eight months with the Expeditionary Force, returning to England for a home appointment. He died when on military service at Scarborough and was buried in Seamer churchyard.

Major Benson is described as a staunch colleague and as a commanding officer who was ever watchful of the interests and comfort of his men. He leaves a widow, a daughter, and a son who is serving with Lord Strathcona's Horse at the front.

THOMAS LEWIS INGRAM, M.A. CANTAB., M.R.C.S. ENG., D.S.O., M.C.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain T. L. Ingram, D.S.O., who was killed in action on or about Sept. 16th, at the age of 41, was the eldest son of Thomas Lewis Ingram, of The Priory, Wimbledon Common. He was educated at Monkton Combe School and Trinity College, Cambridge, qualifying in 1903, and then held house appointments at Westminster and Poplar Hospitals. He served as a trooper in the Imperial Yeomanry during the South African War, gaining the Queen's medal with three clasps. He was in practice at Welford, near Rugby, when the present war broke out; he applied at once for a commission in the Royal Army Medical Corps and in November, 1914, was attached as medical officer to the King's Shropshire Light Infantry, with which regiment he served till his death.

Early in 1915 Captain Ingram was mentioned in despatches; on Sept. 6th, 1915, he was awarded the Military Cross "for conspicuous devotion to duty and energy at Hooge"; and on May 31st, 1916, he was awarded the D.S.O. "for conspicuous gallantry and devotion to duty. He collected and attended to the wounded under very heavy fire and set a splendid example. Since the commencement of the war he has been conspicuous on all occasions for his personal bravery." His colonel, in writing of him as the bravest man he had ever met, added: "He was loved by every man in the regiment." Captain Ingram married in 1909 Lilian, eldest daughter of the late Lieutenant-Colonel Donnithorne, Royal Scots Greys, and leaves two children.

WILLIAM FRANCIS MACALEVEY, M.R.C.S. ENG.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain W. F. MacAlevey, who was killed in action on Sept. 27th, at the age of 26, was the elder son of Mr. W. C. MacAlevey, of Leicester. He was educated at Stoneygate Preparatory School, Leicester, and at Mount St. Mary's College, Chesterfield, where he was captain of the school, and at St. Mary's Hospital Medical School, where he gained a science scholarship. He obtained the diplomas of the Conjoint Board in 1915, and had intended to take the Final M.B. Lond. after the war. In February, 1915, he took a temporary commission in the R.A.M.C. and went to the front with a field ambulance, to which he became transport officer and later adjutant. On the morning of his death a squad of stretcher-bearers bringing in a wounded man reported that one of their number had fallen by the way, and was, they thought, killed. Captain MacAlevey went out at once alone to look for the missing man and was killed instantly by a shell.

At hospital Captain MacAlevey was an athlete, being captain of the Association football team and a member of the Rugby fifteen. His senior officer describes him as a man eminently suited for the double profession of doctor and soldier, and as untiring in his devotion to duty. As transport officer "he used to care for the horses as if they were sick men."

MARTIN WILLIAM LOY, M.R.C.S. ENG.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

Lieutenant M. W. Loy, who was killed in action on August 28th, 1916, at the age of 43, was fifth and youngest son of the late S. H. Loy, of Keld Head, Pickering. He took his medical course at the London Hospital, obtaining the Conjoint Board qualification in 1894, and then held in succession the appointments of clinical assistant, house surgeon, and receiving-room officer at the hospital. He then entered practice at Thornton-le-Dale, Yorkshire, in partnership with Dr. R. A. Scott, removing in 1902 to Gillingham, Kent. Early in 1916 he obtained a commission in the Royal Army Medical Corps, and went to France with a casualty clearing station, being afterwards attached to the Cheshire Regiment until the time of his death. Lieutenant Loy married in 1909 Edith Christine, elder daughter of the late Lieutenant-Colonel H. D. Bicknell, of Lymington, Hants.

IT is reported that Surgeon-Probationer A. L. Strachan, R.N.V.R., has lost his life in the mine-sweeper *Genista*, torpedoed on Oct. 23rd.

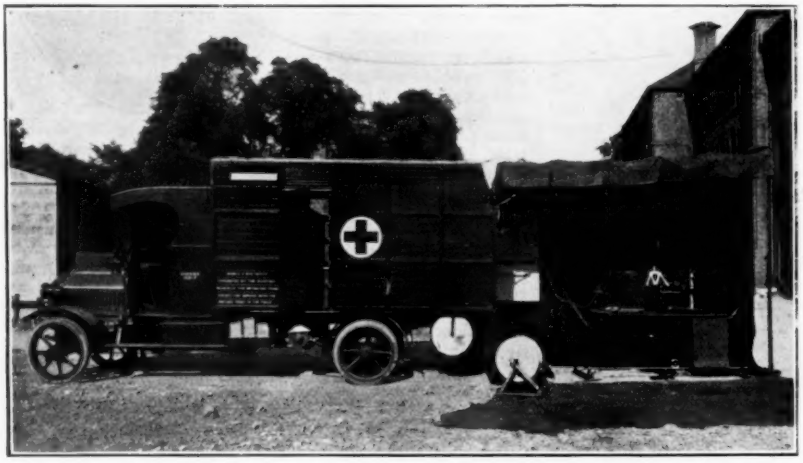
PROVISION OF FOOD AND COMFORTS FOR NAVAL PRISONERS.

Although a Central Prisoners of War Committee of the British Red Cross Society and the Order of St. John of Jerusalem has been appointed, no change has been made in the work of the Ladies' Emergency Committee of the Navy League and the Royal Naval Division Comforts Funds, which will continue to act in regard to the Royal Navy and the Royal Naval Division in the same capacity as regimental associations in respect of the Army. The address of the Ladies' Emergency Committee of the Navy League is 47, Grosvenor-square, W., and of the Royal Naval Division Comforts Fund, Denison House, Westminster, S.W.

A MOTOR X RAY OUTFIT.

We give an illustration of one of the five X ray motor-wagons recently presented by the Scottish branch of the British Red Cross Society for service with the British Army in the field. The wagon has been made by the Albion Motor Car Company, Limited, Glasgow; the chassis is of the 32 h.p. Albion 3-ton type, and the body has been constructed to meet the special requirements. The door half open in the centre of the body shows the accumulators, which are supplied with current from a dynamo mounted on the chassis under the driver's seat; the dynamo is driven by means of a clutch arrangement from the carden shaft of the vehicle. The X ray tube is fixed to a carriage on rails for operating purposes. The negative-holder is above the table, as well as a small screen for protecting the legs of the operator travelling on a single rail to follow the X ray tube. The two cable-drums, one attached underneath the rear portion of the body, and the other seen lying on the ground, are to enable the X ray operating table to be taken some distance away from the vehicle should circumstances make this necessary. The canopy shown extended at the back of the wagon is collapsible and the whole apparatus can be stored inside the vehicle for transporting from place to place.

Motor Wagon with X Ray Outfit.



THE FEDERATED MALAY STATES HOSPITAL AT KIMPTON.

The military hospital maintained at Blackmore End, Kimpton (Herts), by public subscriptions from the Federated Malay States for sick and wounded soldiers has been enlarged by the addition of a new ward containing 44 beds. This brings the total number of beds available to over 200. A large recreation room is in course of construction. The hospital is under the charge of Captain G. D. Freer, R.A.M.C. (T.), formerly Principal Medical Officer, Selangor, F.M.S. Miss Willis, late of the Royal Free Hospital, is matron.

THE ARMENIAN REFUGEES (LORD MAYOR'S) FUND.

The good work which this Fund is doing is well illustrated by the fact that the recent retreat of 25,000 Armenians through dangerous mountain passes, under the guidance of Mr. George F. Gracey, an American Missionary, was successfully accomplished owing in a large measure to the money provided by the Lord Mayor's Fund. The Fund, which also assists Assyrian refugees, is in urgent need of financial support and is deserving of every help. Donations may be sent to either 96, Victoria-street, S.W., or to the Mansion House, London.

THE WAR OFFICE AND THE DUBLIN HOSPITALS.

Since early in the war the general hospitals of Dublin, as of course those in other centres, have acceded to the request of the War Office to treat wounded soldiers in as large numbers as they can accommodate. All the hospitals have set apart wards for the purpose and have placed their resources unreservedly at the disposal of the military authorities. Payment has been made to the hospitals at a rate of from 2*s.* to 4*s.* a day for soldiers, the usual rate being 3*s.* a day, medical and surgical attendance being given free by the visiting staffs in all cases. Early in the war the payments made by the War Office were probably sufficient to pay for the maintenance of the soldier patients, but with the present high prices they have been inadequate, and the reception of wounded soldiers has imposed a tax on the finances of the hospitals. In these circumstances the hospital authorities have received with mixed feelings a memorandum from the War Office, stating that it has come to the knowledge of the War Office that in some cases the payments made to the hospitals more than covered the actual outlay on food, heating, surgical necessaries, &c.; that in future no payment will be made in excess of what is spent on such objects as those enumerated; that no charge is to be made for medical or nursing services, or for rent of premises. "It is impossible," says our Dublin correspondent, "to find any justification for the demand that medical and nursing services are to be given gratuitously, although as a matter of grace they have been so given. The lack of tact shown by the War Office is not unlikely to make the hospitals insist that the entire expense of maintaining soldiers shall be borne by the authorities."

WOUNDED ALLIES RELIEF COMMITTEE.—The address of the Wounded Allies Relief Committee is now changed from Sardinia House, Kingsway, W.C., to 8, Grosvenor-gardens, S.W., the new premises having been lent to the committee by Lord Ilchester.

MALARIA IN CALCUTTA.—At a recent meeting the Health Special Committee of the Calcutta Corporation considered the health officer's proposal to reorganise the mosquito brigades and to undertake systematic anti-malaria measures in selected areas. A number of mosquito brigades are appointed for a period of about six months every year. They usually work from October to March in the suburban wards. The proposed expenditure under the new scheme is Rs.8,214 as against Rs.4,749. The committee temporarily sanctioned the scheme, and asked the medical officer to get out a scheme for concentrating the work of the mosquito brigades on particular localities. It was also decided to ask Dr. C. A. Bentley, Sanitary Commissioner, Bengal, to help the committee in the matter.

Medical News.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At the recent dental examinations just concluded the following candidates passed the First Dental Examination:—

Alfred McCambley and James Rowan Sherrard.

The following passed in the subject of Chemistry and Physics:—

Herbert Daniel Howard.

At the same diet the following candidates passed the Final Examination and were granted the diploma L.D.S. R.C.S.Edin.:—

Erstine Loring Kelly, United States; Johannes Augustus Stegmann, South Africa; John McLean Foreman, Kirkcaldy; Roelof George du Toit, South Africa; John Russell Watson, Edinburgh; and James Henry Brown, Edinburgh; and George Laing passed in the subject of Medicine and Surgery.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the committee, held on Oct. 10th, 31 cases were considered and £300 voted to 30 of the applicants. The following is a summary of some of the cases relieved:—

M.R.C.S. Eng., aged 71, a widower, who practised at Great Torrington and West Africa, and latterly had acted as a ship's surgeon. Suffers from ague contracted in Africa. On his last sea trip the ship was torpedoed, and so has not risked another voyage. Only income the old-age pension. Voted £6 in six instalments.—L.R.C.S. Irel., L.R.C.P. Edin., aged 74, married, who practised at Wycombe and Marlborough. For the last seven years has suffered from cerebro-arterial sclerosis. Wife's income £1 per week, and owing to high price of food unable to pay their way. One married daughter, unable to help. Voted £18 in 12 instalments.—Daughter, aged 60, of L.R.C.S. Edin. who practised at Liverpool. For many years worked as a governess, but had to give it up after a long illness. Only income derived from letting a furnished room in her cottage, but of late has not been successful, and owing to high prices unable to manage. Voted £5.—Widow, aged 48, of M.R.C.S. Eng., who was an army doctor and died in 1905. After death of husband was able to earn a living by needlework and breeding Pekinese dogs, but since the war commenced has not been successful. Only income £30 a year from friend. Not eligible for War Office pension. Two children who can only help slightly. Voted £10 in two instalments.—Daughter, aged 49, of M.D. Glasg. who practised in Ireland and died in 1888. Applicant is a teacher of music, but since the war has not been able to get pupils. Has aged mother, a pensioner of the Fund, who is helpless, and requires her daughter's attendance, which prevents applicant from undertaking work away from home. Voted £5.—Daughter of M.R.C.S. Eng. who practised at Hadleigh. Applicant was a governess for 33 years, but owing to a breakdown in health had to discontinue the work. Income £18 from dividends and £21 pension from another society, and earns a little by needlework. Owing to the high price of food unable to manage at present. Voted £2 and referred to the Guild.—Wife, aged 53, of M.R.C.S. Eng. who practised until recently at Tunbridge Wells. Her husband a few months ago had a paralytic seizure which has left him helpless. His practice, which produced between £500 and £600 a year, has now been sold, and he is to receive one-third of the proceeds for three years, and as the practice was more or less a personal one, less than £100 a year is only expected. There are 11 children, seven of which are at home, and four going to school, and elder ones only able to help very slightly. Voted £2 and referred to the Guild.—Daughter, aged 43, of M.R.C.S. Eng. who practised at Notting-hill and died in 1885. Mother, who for many years was helped by the Fund, has died recently from cancer. Applicant and sister have tried to earn by letting lodgings, but owing to living on the Kent Coast have been unsuccessful lately. Propose giving up house, and try to obtain other work, but want some immediate help. Voted £10.—Widow, aged 30, of L.R.C.P. & S. Edin. who held an official appointment and died in April, 1916. Applicant left with five children, aged 1 to 9½ years, and the only money an insurance of £200. Has removed to Scotland, and hopes to be able to make a little by letting furnished rooms. Highly recommended. Voted £10 in two instalments.—Widow, aged 65, of R.A.M.C. officer who died in June of this year. Only income a pension of £34 per annum. Has two children married and unable to help. Long illness of husband, who had to live on his pension for many years. Applicant too old to obtain work, but she is willing to do what she can. Voted £10.—Daughter, aged 64, of L.S.A. Lond. who practised at Sunderland and died in 1883. Applicant with a sister was left unprovided for. The sister was a pensioner of the Fund, and had an annuity from another society, but she died in August, and the applicant, who was dependent upon her, is now penniless and too ill to work. Voted £12 in 12 instalments.—Daughter, aged 48, of M.D Lond. who practised at Newcastle-on-Tyne. Applicant was left quite unprovided for, and owing to indifferent health of herself and sister unable to work. A friend who used to help unable to do so now owing to depleted income in consequence of the war. Relieved twice (some years ago). Helped by the Guild. Voted £12 in 12 instalments.—Widow, aged 71, of L.R.C.P. & S. Glasg. who practised in East London and died in 1913. Left totally unprovided for at husband's death, who had a long illness. Has four children, three married and unable to help, the other, an invalid daughter, lives with her mother. Has a pension of £30 from a City Company, and her brother and sister help a little. Relieved three times, £36. Voted £12 in 12 instalments.—Daughter, aged 56, of M.R.C.S. Eng. who practised at Newport, Mon., and died in 1892. Since father's death has endeavoured to make a living by keeping a small school, but owing to the increased cost of living unable to make it pay. Relieved once, £12 in 12 instalments. Voted £12 in 12 instalments.—Daughter, aged 46, of M.R.C.S. Eng. who practised at Redcar and died in 1873. Owing to ill-health unable to work, and only income a pension from the R.U.K.B. Assoc. of £21. Mother has £65 per year, but is an invalid, and a sister, who is a trained nurse, has had to give up her appointment to look after her mother and sister. Relieved five times, £52. Voted £10 in two instalments.—Daughter, aged 60, of M.R.C.S. Eng. who practised at Dorking and died in 1873. Applicant left unprovided for, and is a permanent invalid. Income 5s. a week from another charity, and a friend allows her £25 a year. Relieved four times, £40. Voted £10 in two instalments.—Widow, aged 57, of L.F.P.S.Glasg. who practised at Heaton-on-Tyne and died in 1899. Was left unprovided for with six children, three of whom are now married and unable to help. Two delicate daughters are at home, and help to look after lodgers. Applicant's health bad, so unable to do anything. Relieved 11 times, £118. Voted £12 in 12 instalments.—Daughter, aged 55, of L.R.C.P. Glasg. who practised at Birmingham and died in 1874. Left unprovided for, and tries to earn a living by letting lodgings in Wales, but has not been successful the last few years. Relieved five times, £56. Voted £12 in 12 instalments.—Daughter, aged 51, of L.R.C.P.Glasg., who practised at Glasgow and died in 1897. Up to the commencement of the war managed to earn a living by taking in lodgers and paying guests in her house on the north-east coast of Scotland, and has recently been confined to bed. Relieved twice, £20. Voted £10.—Widow, aged 69, of M.B.Edin. who practised in the Shetland Islands and died in 1907. Applicant has very indifferent health, but has tried to live on her pension of £30 from another medical charity, but owing to the increase in the price of food has got into difficulties. Relieved once, four years ago, £6. Voted £12 in 12 instalments.—M.R.C.S Eng., aged 81, who is practising in Cornwall, and previously at Nottingham. Lost his practice through the Insurance Act, and during the last 12 months has only earned £34. Relieved twice, £20. Voted £18 in 12 instalments.—M.D.Edin., aged 75, married, who practised for many years in London. Is now suffering from a paralytic seizure and unable to work. Wife's income only £50. Has recently received an Epsom Pension Relieved once, £18. Voted £18 in 12 instalments.—Daughter, aged 43, of M.R.C.S.Eng. who practised at Peterborough and died in 1907. Applicant left unprovided for. Some years ago the Fund granted money to enable her to qualify for mission work. Her health, however, broke down, and she is now engaged as a clerk at £1 a week. Owing to the increased cost of food finds this insufficient. Relieved once, £20. Voted £7, and referred to the Guild.—Widow, aged 71, of L.R.C.S. Irel. who practised at Walworth and died in 1915. Left unprovided for with one daughter, who is now earning her living as a clerk. Applicant's only income the Old Age Pension. Relieved twice, £14. Voted £12 in 12 instalments.—Widow, aged 62, of L.R.C.S. Irel. who practised in London and died in 1893. Until two years ago applicant managed to earn her own living, but was overtaken by illness and had to be operated upon, and she has been in indifferent health since. A furnished room is provided by friends, but she has no income. Relieved once, £12. Voted £12 in 12 instalments.—Widow, aged 55, of M.B. Durh. who practised at Epsom and died in 1887. Left with two daughters, who were educated by the Guild and are now acting as clerks. Applicant's health has broken down, and she requires help for dentistry and for the purchase of an electrophone for deafness. Relieved twice, £17. The Fund contributed £5 to the Guild towards any assistance they thought desirable.

Subscriptions may be sent to the honorary treasurer, Dr. Samuel West, 11, Chandos-street, Cavendish-square, London, W.

THE MEDICAL SCHOOL OF THE UNIVERSITY OF CAMBRIDGE.—The number of medical students who have entered Cambridge this year is 25, showing a further falling off from the 41 who entered in 1915, the 64 in 1914, and the 116 in 1913.

DONATIONS AND BEQUESTS.—The late Mrs. Laura Catherine Joad, of Patching, near Worthing, left by will £400 to the Worthing Hospital, and £200 each to the Royal Hospital for Incurables, Putney, and the Earlswood Asylum for Idiots.—By the will of the late Mr. Edward Brewis the London Hospital will receive £5000.—The late William P. Lowrie, of Glasgow, has bequeathed £56,000 among various charitable institutions, including £10,000 each to the Glasgow Royal Infirmary and the Glasgow Western Infirmary, and £3000 each to the Glasgow Victoria Infirmary and the Royal Sick Children's Hospital.

ALVARENGA PRIZE OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.—The next award of the Alvarenga prize, amounting to about $250, will be made on July 14th, 1917, provided that an essay deemed by the committee of award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, and must not have been published. The conditions can be obtained from the secretary, 19, South 22D-street, Philadelphia, Pa., U.S.A.

Dr. E. Walpole-Simmons has been selected at a private meeting of the Worcester city council for the office of city chamberlain, an ancient civic office which dates back for centuries. He has been for some time chairman of the health committee of the city council.

THE Institute of Hygiene is lending its help in the crusade against venereal disease by arranging for an instructive series of lectures at the Institute. These lectures, which are delivered at 4 P.M. each Tuesday, are specially intended for district nurses, health visitors, and midwives. The lectures began on Tuesday last, when Sir Malcolm Morris discussed the relation of venereal disease to public health. Dr. J. H. Eyre, Lady Barrett, and Mr. E. R. Townley Clarkson will continue the series.

EPSOM COLLEGE ROYAL MEDICAL FOUNDATION.—The Council invite applications for a "Christie" pension of £45 a year, and for two "France" pensions of £30 each a year. Candidates must be members of the medical profession who are not less than 60 years of age, and whose income does not exceed £60 a year. Further particulars and forms of application can be obtained from the Secretary, at the office of the College, 37, Soho-square, W.

LONDON HOSPITAL.—A short course of lectures on the "Early Diagnosis and Treatment of Syphilis" will be given by Dr. J. H. Sequeira, physician in charge of the skin department of the hospital, on Thursdays, Nov. 23rd and 30th and Dec. 7th and 14th, at 11 A.M. In connexion with these lectures Dr. J. McIntosh has arranged to give practical demonstrations of the examination for spirochætes and Wassermann test. Members of the medical profession will be admitted on presentation of their cards.

MEDICAL MAYOR.—At a private meeting of the Droitwich town council Dr. P. A. Roden, J.P., was adopted unanimously as the mayor of the borough for the ensuing year. This is the first occasion in the history of the borough that a mayor has been chosen from outside the council. Dr. Roden's father, the late Dr. S. S. Roden, served in the office of mayor for five years, the last four consecutively, when he was an alderman of the borough. Dr. P. A. Roden is the medical officer of the borough and the medical officer of the Droitwich union workhouse.

Parliamentary Intelligence.

HOUSE OF LORDS.

TUESDAY, OCT. 31ST.

The Position in Mesopotamia.

THE Earl of DERBY (Under Secretary for War) made a statement in regard to the position of affairs in Mesopotamia. In the course of it he said that the situation in regard to supplies was clearly more satisfactory. There was a slight shortage in alternate diets. The fleet of hospital ships had been considerably augmented, and it was now possible to transport the sick and wounded without delay and with reasonable comfort. Some specially fitted hospital ships were being built and expedited, but they would not be available until next year. The medical services had been greatly augmented, and a number of hospitals, medical officers, and nurses had been despatched along with medical stores and outfits. Regarding the amount of sickness it was difficult to give reliable figures. During the period between April 29th and July 29th, 1916, the admissions to hospital of British troops averaged 2739 per week, deaths 108 per week, and numbers evacuated 1048 per week. From August 5th to Sept. 23rd, 1916, the weekly average was: admissions to hospital 1705, deaths 39, and evacuations 738.

HOUSE OF COMMONS.

WEDNESDAY, OCT. 25TH.

T.N.T. Poisoning.

Mr. ANDERSON asked the Under Secretary for the Home Department whether he was aware that of the 472 cases of industrial poisoning reported during the nine months ending September, 1916, 120 occurred from toxic jaundice and that, of 62 deaths, 33 were attributable to this cause; whether he could state how many of these cases and deaths were due to poisoning from tri-nitro-toluene; and what action he proposed to take.—Mr. BRACE said in reply: The figures are correctly stated in the first part of the question. The number of these cases due to T.N.T. poisoning was 95 and the number of deaths 28. Every possible step is being taken by my department in concert with the Ministry of Munitions to investigate or deal with this disease.

Barrackpore Hospital.

Mr. GEORGE LAMBERT asked the Secretary of State for India whether cooling-fans and lighting installations were available for the hospital and barracks at Barrackpore, where West of England regiments were stationed, in India.—Mr. C. ROBERTS (on behalf of Mr. CHAMBERLAIN) replied: Electric lights and fans will be installed in the hospital at Barrackpore before next hot weather. The Government of India report that they are taking up electrification schemes as quickly as the staff and materials available permit, the order of urgency being determined by medical authorities.

THURSDAY, OCT. 26TH.

Treatment of Venereal Diseases.

Colonel NORTON-GRIFFITHS asked the Parliamentary Secretary to the Local Government Board whether his attention had been called to various resolutions passed by public bodies calling for Government action in regard to the increase of venereal disease; and whether immediate steps would be taken with a view to notification and compulsory treatment, thus mitigating the danger arising to innocent persons by contagion and also safeguarding the welfare and health of our troops.—Mr. HAYES FISHER answered: My attention has been drawn to the resolutions referred to. As the House is aware, the Government has already taken definite action in accordance with the recommendation of the Royal Commission on Venereal Diseases. That Commission, however, came to the unanimous conclusion that no system of notification of these diseases should be put in force at the present time, and after careful consideration I am satisfied that more progress is likely to be achieved in the immediate future in diminishing these diseases by following their recommendation than by taking the steps indicated in the resolutions.

Mr. ANDERSON: Has the right honourable gentleman seen the manifesto signed by Mrs. Pankhurst, Mrs. Lloyd George, and other ladies upon this question, and can he say whether the Government, before they take action, if they do intend to take any action, in the direction of the compulsory notification of venereal disease, will consider that the whole weight of expert evidence is in the direction of showing that this would have exactly a contrary effect, and that it would drive the matter underground, and——

The SPEAKER: Order, order. The honourable Member is now stating arguments.

Captain C. BATHURST asked the right honourable gentleman whether, as stated in the recently published Women Social Workers' Appeal, venereal disease was certainly spreading in the United Kingdom and affecting a large number of innocent persons; and, if so, whether he would institute compulsory notification and compulsory treatment, as in the case of other dangerous contagious diseases, and at the same time take steps to check the activities of fraudulent persons professing ability to cure the disease, as recommended by the Select Committee on Patent and Proprietary Medicines.—Mr. HAYES FISHER answered: On the question of notification I may refer my honourable friend to the reply I have just given. The suggestion contained in the latter part of the question is under consideration.

New Medical Benefit Regulations.

Mr. CHANCELLOR asked the Representative of the National Insurance Commissioners whether, in view of the objection by certain sections of the medical profession to Clause 3 of the proposed new medical benefit regulations, he had any method of dealing with the situation in the event of the doctors deciding not to continue service if the clause was maintained.—Mr. C. ROBERTS answered: In view of the conferences which have recently taken place, the contingency contemplated in the question is, I think, not likely to arise.

Repatriated Civilians.

Mr. HAYES FISHER informed Mr. MALCOLM that the Government Committee on the Prevention and Relief of Distress had made arrangements with the Central Charities Committee for the care of British civilian prisoners released from internment in enemy countries. The Central Charities Committee met them at the port of arrival, afforded temporary assistance and shelter to those in need, arranged for the provision of medical and hospital treatment for sick cases, other than the serious cases which were dealt with by the Red Cross Society, and helped them to obtain employment.

Home Hospital Reserve.

Mr. TYSON WILSON asked the Financial Secretary to the War Office whether he was aware that a large number of men who belonged to the Home Hospital Reserve and who had been on duty since the beginning of the war joined this reserve on the understanding that they would be retained for service at the home hospitals, and that many of these men, some of them over military age, were being drafted for service abroad into any unit that the Army authorities selected; and whether, seeing that these men were serving under a special agreement, they had the right of appeal to any tribunal if they objected to serve abroad.—Mr. FORSTER replied: The men of the Home Hospital Reserve joined originally for service in hospitals at home. Many of them, however, volunteered for service with armies in the field, and of these a considerable number have been drafted for service overseas in some unit of the Royal Army Medical Corps. Those who did not volunteer have been retained at home.

TUESDAY, OCT. 31ST.

Settlement of Insurance Accounts.

Mr. CHANCELLOR asked the representative of the National Insurance Commissioners whether the figures in respect of the final settlement of the remuneration due to doctors for the year 1915 had been furnished to all insurance committees; which insurance committees had distributed the moneys; when the practitioners who had not yet received the

moneys due to them might expect payment; and whether he could do anything to expedite the settlement.—Mr. C. ROBERTS wrote in reply: Figures enabling the final settlement for 1915 to be made have been furnished to all insurance committees in England, and in Scotland and Wales figures enabling further or final payments to be made have been, or will shortly be, furnished to insurance committees in these countries. I am unable to give the particulars asked for in the second part of the question without obtaining a return from all insurance committees, but if the honourable Member has in mind any particular case of delay I will make inquiries.

Industrial Disease.

Mr. ELLIS DAVIES asked the Under Secretary for the Home Department whether disease caused by picric acid entitled the workman affected to compensation under the Workmen's Compensation Act; and, if not, whether he could, in view of the number concerned, add the disease to the Schedule to the Act.—Mr. BRACE replied: The only diseases normally attributable to processes in the manufacture of, or involving the use of, picric acid are eczematous ulceration of the skin, or dermatitis, and poisoning by nitrous fumes. Both of them are scheduled under the Workmen's Compensation Act.

The Notification of Venereal Disease.

Earl WINTERTON asked the Prime Minister whether, in view of the urgency of the matter, he would introduce legislation to make compulsory the notification of venereal disease in all its forms, and criminal its wilful transmission by an infected to a healthy person.—Mr. BONAR LAW (on behalf of Mr. ASQUITH) said: With regard to the first part of the question, I would refer my noble friend to the answers given on behalf of the Local Government Board on Thursday last. The Home Secretary is considering the suggestion contained in the last part of the question.

Treatment of Discharged Soldiers.

Answering Lord H. CAVENDISH-BENTINCK, Mr. LLOYD GEORGE (Secretary for War) said: The War Office is charged with establishing an organisation for the training and treatment of the discharged soldier, and this will be done by means of a civil organisation. The matter is receiving the most careful consideration.

Body-shields for Troops.

Mr. HAZLETON asked the Secretary for War whether there had been any practical outcome of the investigations and experiments into the problem of devising body-shields for the troops at the front; and whether he could say what the present position with regard to the matter now was.—Mr. LLOYD GEORGE replied: A report on the subject has been received from Sir Douglas Haig, and steps are being taken to meet his wishes. It is undesirable to give further details.

WEDNESDAY, NOV. 1ST.

Nurses Registration.

Major CHAPPLE asked the Prime Minister whether, in view of the increasing urgency of enabling those in need of nurses to distinguish those who were fully trained from those who were not, and in recognition of the national work performed by nurses in the care of the sick and wounded, he would bring in a Bill on similar lines to the one submitted to him by the Central Committee for the State Registration of Nurses.—Mr. ASQUITH wrote in reply: This is a highly controversial proposal, as my honourable friend is aware, and I cannot at the present time undertake to introduce it.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

MCKINNEY, B., has been appointed Medical Officer to the Ely Dispensary District by the Enniskillen Board of Guardians.

MITCHELL, ALEXANDER PHILP, F.R.C.S. Edin., M.Ch. M.D., Interim Surgeon to the Royal Hospital for Sick Children, Edinburgh.

PRANGNELL, J. T., M.D. Glasg., Medical Officer of Health for the Borough of Falkirk.

SAMARAWARA, S. E., M.R.C.S., L.R.C.P. Lond., L.M.S.S.A. Lond., Medical Officer to the Birmingham General Dispensary.

WILSON, J., Certifying Surgeon under the Factory and Workshop Acts for the Irvine District of the county of Ayr.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BIRMINGHAM CITY EDUCATION COMMITTEE.—Temporary Assistant School Medical Officer. Salary £300 per annum.

BRIGHTON, ROYAL SUSSEX COUNTY HOSPITAL.—Junior House Surgeon, unmarried. Salary £80 per annum, with board.

BRISTOL GENERAL HOSPITAL.—Casualty House Surgeon. Salary at rate of £175 per annum, with board, &c.

BRISTOL ROYAL INFIRMARY.—House Physician. Salary at rate of £120 per annum, with board, &c.

BURY INFIRMARY.—Senior House Surgeon. Salary £250 per annum, with board, &c.

ILFORD COUNCIL EDUCATION COMMITTEE.—School Oculist. Salary 1½ guineas for each session of two and a half hours.

GLOUCESTER, GLOUCESTERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION.—Surgeon.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Assistant Resident Medical Officer. Salary £100 per annum, with board, &c.

LEICESTER ROYAL INFIRMARY.—Pathologist. Salary £500 per annum.

MANCHESTER COUNTY ASYLUM, Prestwich.—Locum Tenens. Salary £7 7*s.* per week, with board, &c.

NETLEY, SOUTHAMPTON, WELSH HOSPITAL.—Medical Officer. Salary £400 per annum, with board, &c.

NEW HOSPITAL FOR WOMEN, Euston-road.—Temporary Female Assistant Surgeon for six months. Also Female House Physician, Two House Surgeons, and Obstetric Assistant for six months. Salaries at rate of £50 per annum, with board, &c. Also Anæsthetist. Salary £10 10*s.* Also Clinical Assistant for Ophthalmic Department.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—Dental Surgeon.

SALFORD UNION INFIRMARY, Hope, Pendleton, near Manchester.—Female Assistant Resident Medical Officer. Salary £250 per annum, with board, &c.

SHEFFIELD, ROYAL INFIRMARY.—Two House Surgeons. Salary £100 per annum, with board, &c.

VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST ON THE SEPARATE PRINCIPLE.—Assistant Resident Medical Officer.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Physician. Salary £200 per annum, with board, &c.

WALSALL AND DISTRICT HOSPITAL.—Assistant House Surgeon and Anæsthetist. Salary £175 per annum, with board, &c.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Crossgar, in the county of Down, and at Lytham, in the county of Lancaster.

Births, Marriages, and Deaths.

BIRTHS.

BARNES.—On Oct. 24th, at Hill House, Eye, Suffolk, the wife of Lieutenant H. E. Barnes, M.D., R.A.M.C., of a son.

RANKIN.—On Oct. 24th, at Fitzroy-place, Glasgow, Ivy (*née* Taunton), the wife of Temporary Captain W. Rankin, R.A.M.C., of a son.

ROSE-HUTCHINSON.—On Oct. 28th, at Malabar-hill, Bombay, the wife of Major L. T. Rose-Hutchinson, I.M.S.—a son.

MARRIAGES.

PEARCE GOULD—JACKSON.—On Oct. 25th, at St. Mary's, Bettesbanger, Eric Lush Pearce Gould, F.R.C.S., Temporary Surgeon, R.N., to Audrey Mitchell, daughter of the late Mr. Lawrence Jackson, K.C., and of Mrs. Jackson, of Updown, Eastry, Kent.

PLATT—TURNEY.—On Oct. 27th, at Marylebone Parish Church, Harry Platt, M.S., F.R.C.S., Capt. R.A.M.C., to Gertrude S., second daughter of Mr. R. Turney, late of Linslade, Bucks.

THACKER-NEVILLE—TRESHAM.—On Oct. 25th, at St. Paul's, Onslow-square, William Stewart, M.D. (T.C.D.), F.R.C.S. Edin., of the Church of England Mission, and Union Medical College, Peking, Temporary Captain, R.A.M.C., to Maud, youngest daughter of the late Mr. D. H. Tresham, Beylah Indigo Concern, Benares, India, and of Mrs. Tresham, Purston, Eastbourne, England.

DEATHS.

HUDSON.—On Oct. 14th, at Allahabad, India, Lieutenant-Colonel Ernest Hudson, F.R.C.S., I.M.S., youngest son of Henry Lombard Hudson, late of Harleston, Norfolk.

NICOL.—On Oct. 23rd, died of wounds, Captain C. M. Nicol, M.B., R.A.M.C., D.A.D.M.S., aged 28.

VAUGHAN-HUGHES.—On Oct. 25th, at Cemmaes Court, Hemel Hempstead, James Vaughan-Hughes, M.D., L.R.C.P. Lond., aged 95.

WILKINS.—On Oct. 27th, at Stayer House, Eye, Colonel James Sutherland Wilkins, I.M.S., D.S.O., aged 65.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

CHURCHILL, J. AND A., London.
Moore's Manual of Family Medicine and Hygiene for India. Published under the authority of the Government of India. Eighth edition. By C. A. Sprawson, Major, I.M.S. With Foreword by Sir C. Pardey Lukis, Director-General, I.M.S. Price 6*s.* net.

HEINEMANN, WILLIAM, London.
Student's Text-book of Surgery. By H. Norman Barnett, F.R.C.S., Major and Officer Commanding 3/2nd South-Western Mounted Brigade Field Ambulance. Price 21*s.* net.

LEWIS, H. K., AND CO., London.
Sexual Disabilities of Man and their Prevention and Treatment. By Arthur Cooper, Consulting Surgeon to the Westminster General Dispensary. Third edition, revised and enlarged. Price 6*s.* net.

LONGMANS, GREEN, AND CO., London
Essentials of Chemical Physiology for the Use of Students. By W. D. Halliburton, M.D., LL.D., F.R.S. Ninth edition. Price 6*s.* net.
Right Hon. Sir Henry Enfield Roscoe, P.C., D.C.L., F.R.S.: A Biographical Sketch. By Sir Edward Thorpe, C.B., F.R.S. Price 7*s.* 6*d.* net.

Notes, Short Comments, and Answers to Correspondents.

ANGIO-NEUROTIC ŒDEMA.

To the Editor of THE LANCET.

SIR,—In answer to the very interesting and typical account of a case of this complaint by Major, R.A.M.C. (T.F.), in THE LANCET of Oct. 7th, and my appreciation of the difficulty in finding just the information one needs in a text-book, I may be forgiven if I go over ground in my reply with which he as a sufferer is more conversant than I am. While the exact pathology has not been made out, it is generally considered to be a vaso-motor neurosis with increased permeability of the blood-vessels and probably a deficiency of calcium salts in the blood, and while it often occurs in persons with a family history of the same complaint or allied complaints, such as erythema, purpura, Raynaud's disease and chilblains, mucous colitis, and neurasthenia; this family history is certainly not always the case. I have found by careful observation that from time to time in these cases a slight mitral or tricuspid murmur can be detected and that the blood pressure is almost always very low up to about 110 mm. of Hg for ages up to 45 or more, and that slight traces of albumin occur in the urine with fair regularity, and that at least 50 to 65 per cent. of the cases have gastro-intestinal disturbances. The following is an interesting case or set of cases:—

The brother of two patients of mine was invalided home from the East with "dysentery" attacks of hæmorrhage of the bowels. I had met him at a social function, and he had conversed freely with me about his complaint, but did not see him to speak to again, but heard of his progress. After being treated in a nursing home in London for some months for dysentery, he went to Bath, where a diagnosis of appendicitis was made and the appendix removed. Still he got no better and eventually he gave up treatment and took a holiday and went fishing. This did him a lot of good, and the last I heard of him was he was still much better. Personally, from his history I doubted both diagnoses and told the relatives so, on their asking me what I thought; and the bacteriologist who examined his fæces, on my saying I did not think he had found either amœbic or bacillary dysentery said: "That was so." This was while the attacks were on.

Both his relations, my patients, had very low blood pressures, suffered from chilblains very badly, and one had been the subject of very severe attacks of angio-neurotic œdema for over 14 years before I treated the case. Had attacks of diarrhœa from time to time, and severe facial attacks coming on occasionally in the latter half of the nights, and looking as if "just out of the ring from prize-fighting," the features being entirely obliterated.

Sargent and Russell, in their excellent work, mention this complaint and its allied forms as a possibility that must never be lost sight of when investigating a case of acute abdominal symptoms. Most sufferers, I find, are anæmic, but some are ruddy and gouty. Apart from the constitutional tendency to it, consisting of low blood pressure and want of coagulability of the blood, anything which tends to produce neurasthenic conditions tends to bring this on, and therefore one should try to live under the best possible hygienic conditions, avoiding excesses of any kind, errors in dietary, and giving strict attention to the state of the bowels. An entire change often does good, as in the first case mentioned. Those foods which bring on urticaria certainly bring this on, and over-brewed tea is one, and a patient in whom I traced this and who took such tea daily was not discomforted by weak, freshly made, China tea. Again, tobacco is a very common source of trouble, and one patient I had who "never smoked more than three cigarettes a day" got great relief by abolishing smoking altogether. Apart from gastro-intestinal irritants and alcohol, gout, malaria, and syphilis certainly have been at the root of the trouble. One dose of salvarsan has completely stopped it in a case of the latter, and colchicum and quinine gave benefit in the former two sources of trouble.

In uncomplicated cases almost all the remedies used aim at the vaso-motor system, and it is interesting to note that both vaso-dilators and vaso-constrictors are prescribed, such as thyroidin, nitroglycerine, pituitrin, adrenalin, the last two being specially useful in the attacks. As with everything else, if the cause can be found the treatment becomes easy, but I do not think any one irritant or article of diet can be said to be the sole cause of attacks. Nuts certainly act in some persons as a gastric irritant, and the fact of its "coming on three days after eating nuts," reminds me, some years ago when attending boys in a large private boarding school and when called in to attend cases of catarrhal jaundice, I always counted three days back in my mind and then mentioning the day of the week to the boy, said: "See, you had nuts on —— day." After a little reflection, "cocoanuts" were mostly to blame, other times smaller nuts were owned up to. Strawberries, shell-fish, salmon, all in turn affect some. So far as my experience goes, I have found treating the patients for their anæmia with iron and arsenic; for the low blood pressure, with tincture of strophanthus and nux vomica with either alkalies or acids (as indicated by the case under consideration) for three weeks to six weeks at a time, one such course at least every three months, alternately with a course of calcium chloride gr. x. to xx. t.d.s. (or calcium lactate gr. xx. to xxx. t.d.s.) give the best results. Iron glycerophosphate and its calcium salt are excellent for a change.

It is interesting to note with regard to "Major's" experience that it has recently been pointed out that there is a deficiency of lime salts in the food supplied to troops in war time and that this accounts for the prevalence of enteric and dysentery; and certainly I believe one finds a deficiency of lime salts in all cases of abnormal permeability of the vessels, and the benefit of calcium is shown in cases of chilblains and "bleeders." The value of a course of high-frequency in these cases has been testified to by several writers, and during an attack I know of nothing that stops the pain so quickly as the high-frequency effluve, vacuum or brush, the former for face chiefly. During an attack brisk salines, hot alkaline baths, calcium lactate 3i., repeated in two hours if necessary, adrenalin, and pituitrin are the most useful. Specially useful as articles of diet are peas, beans, eggs, butter, and milk, all containing lime salts.

I am, Sir, yours faithfully,

Bournemouth, Oct. 14th, 1916. G. HERBERT RUTTER.

THE REPATRIATION OF GERMAN CIVILIANS.

Lord Robert Cecil stated last week in the House of Commons that an arrangement had been made whereby all civilians over the age of 45 interned in Germany or the British Empire would be repatriated subject to the right of either Power to detain for military reasons not more than 20 persons. Doubtless the great majority of interned British subjects will desire to avail themselves of this opportunity. With regard to interned German subjects, where, as in many instances, they have resided for years in this country and have British-born wives, the case is different. We understand that the repatriation is not compulsory and that any interned civilian has the right of appeal against it, and if the appeal is allowed he remains interned. Political refugees are not forcibly repatriated. An appeal to remain from a German civilian with a British-born wife is readily granted. If the man goes and his wife remains behind she loses the Government grant. This now amounts to 11*s.* 6*d.* weekly in London and 9*s.* 3*d.* in the country, with 1*s.* 9*d.* extra for each child, which may be raised to 2*s.* 6*d.* at the discretion of the guardians.

A GOLD COAST DRUG.

THE Blue-book of the Gold Coast Colony for 1915 contains the following reference to a sample of bark of colonial growth sent to the Imperial Institute for investigation in the Scientific and Technical Research Department:—"A sample of bark was identified as probably that of *Zanthoxylum senegalense*, D.C. The bark, which has stimulant properties and is employed locally in rheumatic affections, intestinal troubles, and other diseases, has been previously examined by various investigators and found to contain a fixed oil, a neutral body, and two alkaloids, one of which (artarine) was found to be present to the extent of 0·4 per cent. This drug is described as producing muscular irritation and physiological disturbances similar to those induced by veratrine. The root bark of *Zanthoxylum senegalense* also yields a fixed oil which (probably on account of the artarine dissolved in it) tends to produce paralysis of the nervous system." Although there is not any regular demand for this bark in Europe, it is possible that if the alkaloid artarine could be shown to be clearly analogous to veratrine in physiological activity it might replace the latter in medicine. It was therefore wisely suggested that a quantity of the bark should be sent to the Imperial Institute for investigation.

THE PROLIFICITY OF OPPOSITE TWINS.

To the Editor of THE LANCET.

SIR,—In England it *is* a popular and widely-known belief that in the case of twins of opposite sexes the girl is invariably sterile. In fact, I was asked to consider my own marriage in this direction. However, my wife, though such a twin, has presented me with five healthy children.

I am, Sir, yours faithfully,

Zürich, Oct. 25th, 1916. M.D.

X RAY APPARATUS AND ACCESSORIES.

WE have received an interesting catalogue (B) of X ray apparatus, tubes, and accessories from Messrs. R. Butt and Co., Ltd., of 147, Wardour-street, London, W. There are some admirable illustrations made from the actual X ray tubes and apparatus kept in stock. As improvements are made they are adopted, this firm being their own manufacturers. The descriptive matter is well written and contains some useful practical information.

ESPERANTO AND RUSSIAN.

MEMBERS of the Tutmonda Esperanta Kuracista Asocio (Universal Esperanto Medical Association), which has the names of several English medical men on its roll, will be interested in a letter which appears over the name of Mme. Sujadinoff in a Russian Supplement published recently by the *Times*. The study of Russian is now the subject of considerable attention, and the matter of transliteration has been much discussed in the public press, and the *Times* has now adopted a scheme, admittedly not perfect in all its details, for the Russian section of that paper. In the letter referred to above Mme. Sujadinoff points out that every letter of the Russian alphabet can be exactly represented by the use of Esperanto, illustrating her statement by a parallel comparison of the two alphabets. She also advises those who intend to learn Russian to facilitate their task by taking a preliminary course in Esperanto. That the one language should particularly help in the acquisition of the other is not at all remarkable, seeing that Dr. Zamenhof, the inventor of Esperanto, is a Russian.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

The following journals, magazines, &c., have been received:—Medical Journal of South Africa, Annali di Medicina Navale e Coloniale, Midland Medical Journal, Proctologist and Gastroenterologist, Archives of Internal Medicine, Pacific Medical Journal.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Papers:—Prof. W. M. Bayliss: Method of Raising a Low Arterial Pressure.—Mr. A. J. Brown and Mr. F. Tinker: Selective Permeability: the Absorption of Phenol and other Solutions by the Seeds of Hordeum vulgare.—Mr. C. Shearer: On the Toxic Action of Dilute Pure Sodium Chloride Solutions on the Meningococcus.—Mr. C. Shearer and Mr. H. W. Crowe: The Rôle of the Phagocyte in Cerebro-spinal Meningitis.—Mr. S. B. Schryver and Mary Hewlett: Investigation dealing with the Phenomena of "Clot" Formations. Part IV., The Diphasic Erosive Action of Salts on the Cholate gel. (communicated by Prof. V. H. Blackman).—Mr. Ingvar Jorgensen and Mr. F. Kidd: Some Photochemical Experiments with Pure Chlorophyll and their bearing on Theories of Carbon Assimilation (communicated by Prof. V. H. Blackman).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Thursday, Nov. 9th.

BALNEOLOGY AND CLIMATOLOGY (Hon. Secretaries—Chas. W. Buckley, J. Campbell McClure): at 5 P.M.

Discussion:

On "The Treatment by Physical Methods of Medical Disabilities induced by War," in which Dr. Gordon, Sir John Collie, Major S. A. Smith, D.S.O., C.A.M.C., and Captain D. A. Clark, C.A.M.C., of the Special Canadian Hospital, Ramsgate, Major Black, Command Depot, Heaton Park, Captain Sawdon, C.A.M.C., Buxton Special Canadian Hospital, Dr. Humphris, Dr. King-Martyn, Bath, Dr. Nunneley, Brighton, and others will take part.

Members of other sections, especially of the MEDICAL, SURGICAL, NEUROLOGICAL, and ELECTRO-THERAPEUTICAL SECTIONS, are invited to be present.

N.B.—Will members please note that the meeting will be held at 5 P.M. (instead of 5.30.).

(At 7.30 P.M. the members will dine together at Pagani's Restaurant, Great Portland-street, W., and members may bring guests. Members who wish to dine are requested to send their names to Dr. J. Campbell McClure, 59, Harley-street, W.)

Friday, Nov. 10th.

CLINICAL (Hon. Secretaries—David Forsyth, T. P. Legg): at 8 P.M.

Cases:

Dr. H. Batty Shaw: Two Cases of Congenital Heart Disease showing Pulmonary Hypertrophic Osteo arthropathy.

Dr. F. Parkes Weber: (1) Progressive Spinal Muscular Atrophy (Duchenne-Aran) following Electric Shock; (2) Thrombo-angiitis Obliterans (Non-syphilitic Arteritis Obliterans of the Hebrews) affecting Three Limbs; (3) Chorea Rhythmica in a Man.

RÖNTGEN SOCIETY, Institution of Electrical Engineers, Victoria Embankment, W.C.

TUESDAY.—8.15 P.M., General Meeting. Capt. C. T. Holland: Presidential Address.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

TUESDAY—5 P.M., Horace Dobell Lecture:—Dr. H. R. Dean: The Mechanism of the Serum Reactions.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

Course of Lectures on the Anatomy of the Human Body, for First-aid and Ambulance Students:—

MONDAY.—5 P.M., Lecture III.:—Prof. A. Keith: The Lungs and Trachea.

WEDNESDAY.—5 P.M., Lecture IV.:—Prof. A. Keith: Respiration.

FRIDAY.—5 P.M., Lecture V.:—Prof. A. Keith: The Brain.

Anatomical Preparations and Specimens used for illustration will be on exhibition in the Theatre from 3 P.M. to 5 P.M. on each lecture day, and between 10 A.M. and 5 P.M. in the Hall of the Museum on the following day.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. R. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham): Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

CHADWICK PUBLIC LECTURES.

THURSDAY (at the Norwich Museum).—3 P.M., Dr. C. Porter: The Health of the Future Citizen—Lecture II., Babyhood and the Baby (illustrated with lantern slides).

FRIDAY (at the Lecture Room of the Royal Society of Arts, John-street, Adelphi, W.C.).—5.15 P.M., Professor William Stirling: Fatigue, and its Effects on Industry and Efficiency—Lecture III., Fatigue—a Universal Phenomenon of Life (illustrated with lantern slides).

INSTITUTE OF HYGIENE, 33-34, Devonshire-street (Harley-street), W.

TUESDAY.—4 P.M., Dr. J. W. H. Eyre: Venereal Virus and its Detection.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON, W.C.

MANAGER'S NOTICES.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

Subscribers abroad are particularly requested to note the rates of subscriptions given on page 6.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the rates shown, whatever be the weight of any of the copies so supplied.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Nov. 1st, 1916.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radiation in Vacuo.	Maximum Temp. Shade	Min. Tem.	Wet Bulb.	Dry Bulb.	Remarks.
Oct. 26	29·720	S.W.	...	83	55	42	42	43	Fine
,, 27	29·384	S.	0·05	70	56	43	48	49	Raining
,, 28	29·330	S.W.	0·61	84	56	43	47	51	Fine
,, 29	29·280	S.W.	...	71	55	45	49	51	Cloudy
,, 30	29·300	S.W.	0·19	89	61	50	51	52	Raining
,, 31	29·614	S.W.	0·26	91	57	48	46	48	Cloudy
Nov. 1	29·880	S.W.	0·20	85	58	48	49	51	Cloudy

Communications, Letters, &c., have been received from—

A.—Dr. F. W. Andrewes, Lond.; Mr. R. J. Albery, Lond.; Messrs. Allen and Hanburys, Lond.; Mr. D. McCrae Aitken, Lond.; Dr. M. Affi, Abassia; Association for Moral and Social Hygiene, Lond., Hon. Secretary of; A. F.; Anglo-French Drug Co., Lond.; Anglo-American Pharmaceutical Co., Croydon; *American Journal of Clinical Medicine*, Chicago, Librarian of; Mr. E. Arnold, Lond.; Dr. Edwin L. Ash, Lond.

B.—Mr. D. M. Barry, Pretoria; Messrs. T. B. Browne, Lond.; Brentford Union, Clerk to the; Messrs. Wm. Browning and Co., Lond.; Mr. E. Baker, Birmingham; Beckett Hospital, Barnsley, Secretary of; Birmingham City Education Committee, Secretary of; Baillie's Institution, Glasgow, Librarian of; Captain C. L. Balkwill, R.A.M.C.; Messrs. Butterworth and Co., Lond.; Messrs. Bedford and Co., Lond.; Mrs. Cloudesley Brereton, Lond.; Mr. Haydn Brown, Lond.; Dr E. Bigg, Blagdon; Messrs. Chas Birchall, Liverpool.

C.—Surgeon A. B. Clark, R.N.; Messrs. Cassell and Co., Lond.; Messrs. Cutting and Underwood, Lond.; Mr. F. S. Cooper, Lond.; Messrs. Samson Clark and Co., Lond.; County Asylum, Prestwich, Medical Superintendent of; Messrs. J. and A. Churchill, Lond.; Sir John Collie, Lond.; Surgeon H. St. Clair Colson, R.N.; Chicago School of Sanitary Instruction; Chadwick Trust, Lond., Secretary of; Mr. F. Charlesworth, Lond.; Central Committee for National Patriotic Organisations, Lond.; Master of Christ's, Cambridge; Mr. S. Forrest Cowell, Lond.

D.—Dr. R. Donaldson, Reading; Dr. J. F. Devane, Limerick; Mr. T. Dixon, Lond.; Messrs. De Haar and Zoon, Haarlem; Messrs. W. Dawson and Sons, Lond.; Mr. H. Dickinson, Lond.; Dr. Vincent Dickinson, Lond.; Dr. B. Dunlop, Lond.; Professor David Drummond, Newcastle-on-Tyne; Dod's Peerage, Ltd., Lond.

E.—Dr. D. L. Eadie, Edinburgh; Mrs. F. Edwards, Markyate; Dr. T. Evans, Lond.; Eugenics Education Society, Lond., Hon. Secretary of; Dr. O. Eccles, Lond.; E. W. S.; Captain W. d'Este Emery, R.A.M.C.(T.).

F.—Dr. Ramon Ferris, Valencia; Messrs. Frith and Co., Lond.; *First Aid, &c., Gazette*, Lond., Editor of; Dr. P. Fildes, Haslar; Dr. R. Fortescue Fox, Lond.; Factories, Chief Inspector of, Lond.; Captain J. M. Fortescue-Brickdale, R.A.M.C.(T.).

G.—Messrs. Chas. Griffin and Co., Lond.; Mr. H. Gian, Worcester; Gloucestershire Royal Infirmary, Gloucester, Secretary of; Dr. A. Greenwood, Lynton; G. R. B.; Dr. Claude Gouldesbrough, Lond.

H.—Dr. H. E. Haynes, Brantwood; Messrs. Hilton and Co., Calcutta; Mr. W. Heinemann, Lond.; Dr. T. E. Harwood, Lond.; Captain H. Elwin Harris, R.A.M.C.(T.); Major Thos. Houston, R.A.M.C.; Mr. J. H. Hollyer, Droitwich; Messrs. C. J. Hewlett and Son, Lond.

I.—Institute of Hygiene, Lond.; Incorporated Society of Trained Masseuses, Lond., Organising Secretary of; Institute for Medical Research, Kuala Lumpur, F.M.S., Director of; Ilford Council Education Committee, Secretary of.

J.—Dr. A. J. Jex-Blake, Lond.; Mr. H. R. Jensen, Liverpool; Dr. F. Wood Jones, Lond.; J. W. M.

K.—Dr. H. R. Kenwood, Lond.; Lieutenant Colonel W. S. Kerr, R.A.M.C.; Mr. H. Kimpton, Lond.

L.—Dr. W. R. Logan, Colinton; Messrs. H. K. Lewis and Co., Lond.; Liverpool Free Public Libraries, Chief Librarian of; London Electro-Medical Supply Co.; Dr. C. E. Lea, Manchester; Dr. Thomas Lumsden, Lond.; Mr. John Lane, Lond.; Messrs. Lee and Martin, Birmingham; Local Government Board, Lond., Secretary of; Leicester Permanent Library, Librarian of; Leeds and West Riding Medico-Chirurgical Society, Secretary of; Liverpool Medical Institution, President of; Dr. Claude Lillingston, Peppard Common.

M.—Dr. Otto May, Lond.; Dr. Hugh A. Macewen, Lond.; Dr. Milne McIntyre, Glasgow; Mr. Claude H. Mills, Lond.; Messrs. May and Williams, Lond.; Messrs. J. Menzies and Co., Glasgow; Surgeon-General Sir Geo. H. Makins; Messrs. Horace Marshall and Son, Lond.; Messrs. Mather and Crowther, Lond.; Mr. J. E. R. McDonagh, Lond.; Messrs. May and Baker, Lond.; Minière Seisti Bituminosi di Mèride and Besano, Mèride; Messrs. Macmillan and Co., Lond.; Malay States Information Agency, Lond.

N.—Major D. Gray Newton, R.A.M.C.(T.); Captain H. T. Newling, R.A.M.C.; New York Pharmaceutical Co., Bedford Springs, U.S.A.

O.—Dr. G. J. O'Reilly, Lond.; Mr. Bernard O'Neill, Lond.; Mr. Joseph Offord, Lond.; Messrs. Ozonair, Lond.

P.—Mr. H. A. Palmer, Staines; Captain F. E. Pettman, R.A.M.C.; Dr. Hugh R. Phillips, Lond.; Mr. W. H. Plows, Lond.; Messrs. W. Porteous and Co., Glasgow; Mrs. W. Pagen, Whitehaven; Dr. Herdman Porter, Faversham; Miss E. Pickton-Turbervill, Lond.; Dr. Francis R. Packard, Philadelphia; Dr. Michael J. Petty, Buenos Aires.

R.—Mr. S. H. Rouquette, Lond.; Dr. R. R. Rentoul, Liverpool; Royal College of Surgeons in Ireland, Dublin; Lieutenant-Colonel N. Rainier, I.M.S.; Royal Microscopical Society, Lond., Assistant Secretary of; Mr. J. H. Rodgers, Barnsley; Dr. J. Reynolds, Lond.; Royal Sussex County Hospital, Brighton, Secretary to.

S.—Dr. Charles Singer, Oxford; Mr. H. Sandford Smith, Eltham; Dr. G. Cardno Still, Lond.; Messrs. W. H. Smith and Son, Lond.; Dr. Agnes Savill, Lond.; Messrs. Seabrook Bros., Lond.; Mr. W. B. Saw, Lond.; Messrs. Saward, Baker, and Co., Lond.; Mr. J. Seed, Ashton-on-Ribble; Société Européenne de Publicité, Paris; Miss F. Stark, Lond.; Strand Engraving Co., Lond.; Messrs. Smith, Elder, and Co., Lond.; Mr. A. Marmaduke Sheild; Dr. R. Percy Smith, Lond.; Dr. James F. Smith, Whithorn.

T.—Dr. W. J. Turrell, Oxford; Dr. Ernest Thomson, Glasgow; Dr. C. J. Thomas, Lond.; Mrs. Tudhope, Coatbridge; Dr. M. Takayasu, Osaka; Mr. J. Thin, Edinburgh.

U.—United Provinces, India, Lucknow, Chief Plague Officer of.

V.—Dr. Felix Vinrace, Birmingham; Mr. B. C. Varrier-Jones, Cambridge.

W.—Dr. S. A. K. Wilson, Lond.; Dr. W. H. Whitehouse, Lond.; Mr. C. Whittaker, St. Leonards-on-Sea; Messrs. Wills, Lond.; Dr. Harold Waller, Lond.; Dr. Norman Walker, Edinburgh; Lieutenant-Colonel Sir A. E. Wright, C.B.; Mr. P. W. Wilson, Hendon; Dr. W. J. Wilson, Belfast; Welsh Hospitals, Cardiff, Hon. Secretary of.

Z.—Dr. Theodor Zangger, Zürich.

Letters, each with enclosure, are also acknowledged from—

A.—Mr. N. Adler, Hove; Ancoats Hospital, Manchester, Secretary of; Ardath Tobacco Co., Lond.; Ashton-under-Lyne District Hospital, Secretary of.

B.—Mr. W. R. Barlow, Otak; Messrs. Burroughs Wellcome and Co., Lond.; Birmingham University, Secretary of; Bristol Royal Infirmary, Secretary of; Captain C. A. Baragar, C.A.M.C.; Dr. J. C. Bowie, Cardiff; Messrs. Deighton, Bell and Co., Cambridge; British Oxygen Co., Lond., Secretary of; Barnwood House Hospital, Gloucester, Medical Superintendent of; Brighton Corporation, Accountant to the; Messrs. Brentano's, Paris; Mr. Bartrum, Bewdley.

C.—Dr. D. M. Crooks, Treharris; Messrs. J. and A. Carter, Lond.; Charing Cross Hospital Medical School, Lond., Dean of; Messrs. Carnrick and Co., Lond.; Dr. H. Carlill.

D.—Mr. H. O. Davies, Lond.; Messrs. Duncan, Flockhart, and Co., Edinburgh; Dr. G. B. S. Darter, Victoria West.

E.—Edgar Allen Institute, Sheffield, Secretary of; E. M. C.; The Erasmic Co., Warrington.

F.—Mr. F. H. Foulds, Droitwich.

G.—Dr. S. Gill, Formby; G. M. B.; Dr. J. W. Grange, Manchester; Lieutenant F. George, R.A.M.C.; Lieutenant D. Guthrie, R.A.M.C.; Golledge, Lond.; Glasgow Royal Infirmary, Secretary of.

H.—Messrs. Hogg and Son, Lond.; H.M. Stationery Office, Lond.; Sister Heywood, Lond.; H. W.; Messrs. Howard and Sons, Ilford.

J.—Dr. J. E. L. Johnston, Minna; Major J. Davenport Jones, I.M.S.; J. H. W.; J. S.

K.—Messrs. S. Kutnow and Co., Lond.; Dr. L. Knuthsen, Lond.; King Edward VII. Hospital, Cardiff, Secretary of.

L.—Surgeon W. S. Lynd, R.N.; Mrs. Lawson, Lond.; Messrs Lever Bros., Port Sunlight.

M.—Dr. L. J. Minter, Brighton; Dr. A. R. Moody, Stoke-on-Trent; Dr. Irwin Moore, Lond.; Messrs. C. Mitchell and Co., Lond.; Maltine Manufacturing Co., Lond.; Messrs. Macniven and Wallace, Edinburgh; Professor R. Morison, Newcastle-on-Tyne; Mr. R. Martin, Banbridge; Dr. A. Morison, Lond.; M. P. S., Balham; Dr. Bouverie McDonald, New Brighton; Captain W. Morrison, R.A.M.C.

N.—Northampton Education Department, Deputy Clerk to the.

P.—Dr. M. Paterson, Denbigh; Mr. R. H. Paterson, Edinburgh; Dr. F. H. Pearce, Salisbury; Messrs. Parke, Davis and Co., Lond.

Q.—Queen's University, Belfast, Bursar of.

R.—Dr. M. J. Ryan, Crumlin; Messrs Roberts and Co., Lond.; Royal Society of Medicine, Lond., Secretary of; Royal Albert Institution, Lancaster, Secretary of; Miss Mary Richards, South Luffenham; Rochester and Chatham Printing Co., Manager of; Royal Surrey County Hospital, Guildford, Secretary of.

S.—Dr. O. Schnitter, Greylingstad; S., Wimbledon; Southampton Corporation, Treasurer to the; Messrs. Spiers and Pond, Lond.; St. Andrew's Hospital, Northampton, Accountant to the; Staffordshire Education Committee, Stafford, Secretary of; St. John Ambulance Association, Lond., Secretary of.

V.—Messrs. Van Houten, Lond.

W.—Dr. H. C. Weber, Georgetown; West Ham, &c., Hospital, Lond., Secretary of; Dr. E. Wilks, Lond.; Captain A. F. Wright, R.A.M.C.; Mr. E. C. Wimberley, Prestatyn; Dr. R. S. Williams, Reading; West Bromwich District Hospital, Secretary of; Messrs. W. Wood and Co., New York; Captain T. Warrington, R.A.M.C.